

CONCHOLOGIA ICONICA:

OR,

ILLUSTRATIONS

OF THE

SHELLS OF MOLLUSCOUS ANIMALS.



VOL. XIII.

CONTAINING MONOGRAPHS OF THE GENERA

TEREBRATULA.

RYNCHONELLA.

CRANIA.

ORBICULA.

LINGULA.

CYMBIUM.

CYCLOSTOMA.

CYCLOPHORUS.

LEPTOPOMA.

VITRINA.

SIMPULOPSIS.

PHASIANELLA.

TROCHUS.

BY

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"Thy cupboard serves the world; the meat is set,
Where all may reach: no beast but knows his feed.
Birds teach us hawking: fishes have their net;
The great prey on the less; they, on some weed."

George Herbert.

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MONOGRAPH
OF THE GENUS
T E R E B R A T U L A.

'Now are our brows bound with victorious wreaths,
Our bruised arms hung up for monuments.'

Shakespeare.





TEREBRATULA

PLATE I.

Genus TEREBRATULA, *Lhwyd*.

Testa inæquivalvis, æquilateralis, globosa vel ovata, interdum depressiuscula, nunc levigata, nunc radiatim striata aut costata, semper punctata, valvâ supernâ ventrali, tumido-convexâ, posticè rostratâ et perforatâ, foramine interdum integro, deltidio clauso, interdum imperfecto, deltidio plus minus partito, valvâ infernâ dorsali, plerumque planiore; cardine processibus dentiformibus variè callosis in valvâ ventrali composito, processibus alteris in valvâ dorsali validè interclaudentibus; valvâ dorsali ad cardinem lobatâ, apophyse internâ variâ munitâ.

Shell inequivalve, equilateral, globose or ovate, sometimes rather depressed, now smooth, now radiately striated or ribbed, always punctured, upper valve ventral, tumidly convex, beaked and perforated posteriorly, perforation sometimes entire, with a closed deltidium, sometimes made imperfect by a more or less divided deltidium, lower valve dorsal, generally flatter; hinge composed of two variously callous tooth-like processes in the dorsal valve, strongly interlocking with two other processes in the opposite valve; dorsal valve lobed at the hinge and furnished with a variable internal apophysis.*

Forty years ago, when M. Valenciennes prepared for Lamarck, who was already blind, the monograph of this genus for his 'Histoire des Animaux sans Vertèbres,' the shells of only twelve to fourteen species of recent *Terebratulæ* had been observed, the soft parts of only one, and the organization of the Brachiopods generally was only very imperfectly known. Although Linnæus had remarked that the animal of *T. caput-serpentis* differs not less from any other animal that he had found in shells, than night from day,—“animal quod intus conditur à vermibus qui aliis in conchis omnibus sibi invicem fere sunt similes non differt minus quam à nocte dies,”—the *Terebratulæ* and its allies were still arranged with the lamellibranchiate Conchifera.

De Blainville, and subsequently, by a more elaborate investigation, Professor Owen, ascertained that the brachiæ do not exist in the form of lamellæ, but are incorporated by a system of vessels with the mantle-lobes. Along with the discovery of the phenomenon that the mantle-lobes of the Brachiopods perform not only the office of secreting the shell, but also of respiration, another peculiarity was ob-

served, namely, that the valves are differently placed from those of other bivalves, with regard to the position of the animal,—that, in fact, they are not side-valves connected dorsally by a cartilage and ligament, but dorsal and ventral valves connected, in the *Terebratulæ*, by closely interlocking tooth-like processes in relation with an internal apophysary skeleton, and a complicated system of muscles, to which may be added a force acquired through the habit of the animal in affixing itself to foreign bodies by a fibrous byssus-like tendon. Another peculiarity which presented itself was the presence of a pair of internal ciliated arms; and the Brachiopods, even as late as 1830, were arranged by Cuvier and his contemporaries in immediate proximity to the Cirrhipedes. It had, however, been observed that the ciliated arms of the Brachiopod, are quite distinct organs from the cirrhi of the Cirrhipede, and Professor Owen's beautifully detailed exposition of its anatomy removed all doubt on the subject. Projecting from the mouth of the animal on either side, they correspond, or, to speak scientifically, are homologous with, the labial palps of other bivalves, prolonged, as it were, on muscular tubes so as to require being folded or coiled up. In *Terebratula* an internal bony skeleton or apophysis is formed, proceeding from the hinge in connection with the dorsal valve, for the support of the arms, and being extremely variable in structure, it affords excellent characters to the conchologist for the distinction of groups.

The *Terebratulæ* are chiefly deep-dwelling Brachiopods, and from the few pains given to dredging them from their native haunts, the varieties of the apophysary skeleton were not until lately known. The dredgings of M. Gaudichaud, M. D'Orbigny, MM. Quoy and Gaimard, Capt. King, Mr. Cuming, Capt. Belcher, Professor Forbes, Mr. MacAndrew, Mr. Barlee, and others, have furnished specimens with internal skeletons, coupled with valuable bathymetrical observations; and the different forms of apophysis, and corresponding development of the arms, have been well observed by M. D'Orbigny, Mr. Davidson, Mr. Woodward, and Mr. King. Excellent systematic catalogues of both recent and fossil species have been published by Mr. Davidson, and by Dr. Gray, assisted by Mr. Woodward, in which the different forms of apophysis are employed as the grounds of subdivision, and the geographical distribution of the species in space, in depth, and in time has been worked out with much ingenuity by Professor Suess.

It is not convenient, nor indeed practicable, to give the descriptions and figures of shells in this work in their natural order; but in the case of the present genus I have indicated the systematic distribution of the species now commonly adopted, by using the newly-introduced names of genera as sub-genera. The variations of the apophysis upon which these are founded are as follows:—

1. WALDHEIMIA, *King*; a free, largely-produced ribbon-like loop, considerably reflected. Pl. 2. f. 3 a. Nine species.
2. TEREBRATULA, *Lheryd*; loop small, simple, not reflected. Pl. 3. f. 8 a. Two species.
3. TEREBRATULINA, *D'Orb.*; loop small, arched into a circle on projecting blades. Pl. 4. f. 15 c. Six species.
4. TEREBRATELLA, *D'Orb.*; a freely-produced ribbon-like loop, resembling that of *Waldheimia*, and similarly reflected, but strengthened across the middle by the additional attachment of a cross process affixed to a central septum. Pl. 5. f. 20 a. Eleven species.
5. MAGAS; loop resembling that of *Terebratella* but more contracted, with the cross process more broadly laminated next the septum. Pl. 8. f. 31 a. Two species.
6. BOUCHARDIA; loop obsolete owing to the callous thickening of the hinge and adjacent parts; apophyses represented by the septum and laminated processes of *Magas* produced and thickened into the form of an anchor. Pl. 8. f. 33 c. Three species.
7. KRAUSSIA; no loop; apophysis represented by a central septum, from the extremity of which diverge a pair of fan-like processes. Pl. 9. f. 37 a and 38 b. Five species.
8. MEGERLE; loop moderate, trebly attached, to blades projecting from the hinge, to a broad cross process affixed to a central septum, and on either side by a short intermediate lobed process. Pl. 11. f. 47 b. One species.
9. GWYNIA?; apophysis unknown. One species.
10. MORRISIA; loop short, attached to a central process in the form of a spur, not reflected. Pl. 10. f. 41. Three species.
11. ARGIOPE; loop lobed, sweeping round the valve, supported in front by one to three short marginal septa. Pl. 10. f. 43 a and 45 a. Four species.
12. THECIDEA; loop four-lobed, callously affixed to the valve. Pl. 11. f. 48 c. One species.

Geographical Distribution.

It is difficult to generalize on the geographical distri-

bution of the *Terebratula*, with the hope of arriving at many conclusions of interest, without embracing the fossil species. As might be expected in the case of a tribe of animals which existed so much more abundantly in the primeval seas, and are perhaps destined at no very remote period to disappear altogether, they are much scattered, and are not abundant in individuals. Nevertheless there are few genera of mollusks of which the habitats and specific nature are now so well known. Of the forty-eight recorded species of *Terebratula* (cited rather at random by authors at from sixty to seventy in number), four are based upon single specimens of somewhat doubtful specific value, without any information as to their habitats,—*cancellata*, *Bouchardii*, *transversa*, *suffusa*; but their relationship with undoubted species is not sufficiently obvious to admit of their being discarded. Of three species (*radiata*, supposed to be a native of Corea; *crenolata*, of the Canaries, and *dilatata*, of Coquimbo, or the Strait of Magellan) the habitats are not well authenticated, and appear to me to be doubtful. Of the habitats of the remaining forty-one species there is no manner of doubt; but of two of these the specific value is open to criticism—*physema* and *capsula*. There remain, then, thirty-nine species of which the sub-genus (founded on the structure of the apophysis), the species, and the habitat may be relied on.

DISTRIBUTION OF SPECIES IN PROVINCES.

Eastern Hemisphere.

I. North European.	<i>Terebratulina abyssicola</i> .
<i>Waldheimia eranium</i> .	<i>Terebratella Corvatica</i> .
— <i>septigera</i> .	IV. Indo-Pacific Province.
<i>Terebratulina caput-serpentis</i> .	<i>Waldheimia picta</i> .
<i>Terebratella Labradorensis</i> .	<i>Terebratulina Cumingii</i> .
— <i>Spitzbergensis</i> .	<i>Terebratella sanguinea</i> .
II. Lusitanian Province.	V. Australo-Zealandic Province.
<i>Terebratula vitrea</i> .	<i>Waldheimia flavescens</i> .
<i>Terebratulina caput-serpentis</i> .	— <i>lenticularis</i> .
<i>Megerlia truncata</i> .	<i>Terebratella cruenta</i> .
<i>Morrisia Anomiioides</i> .	— <i>rubella</i> .
— <i>Davidsoni</i> .	— <i>rubicunda</i> .
— <i>lunifera</i> .	<i>Magas Valenciennesii</i> .
<i>Argiope decollata</i> .	<i>Bouchardia fibula</i> .
— <i>cuneata</i> .	— <i>Cumingii</i> .
— <i>Neapolitana</i> .	<i>Kraussia Lamarckiana</i> .
— <i>cistellula</i> .	VI. South African Province.
<i>Thecidea Mediterranea</i> .	<i>Kraussia rubra</i> .
III. North Asiatic Province.	— <i>cognata</i> .
<i>Waldheimia Grayi</i> .	— <i>pisum</i> .
<i>Terebratulina Japonica</i> .	— <i>Deshayesii</i> .

Western Hemisphere.

VII. Magellanic Province.	VIII. Panamic Province.
<i>Terebratula uva</i> .	<i>Terebratula uva</i> .
<i>Terebratella Magellanica</i> .	<i>Waldheimia globosa</i> .

IX. *Brazilian Province.*X. *North American Province.**Bouchardia tulipa.**Terebratulina caput-serpentis.*

DISTRIBUTION OF SUBGENERIC TYPES.

Terebratula.—Lusitanian, Magellanic, and Panamic provinces.*Waldheimia*.—North European, North Asiatic, Indo-Pacific, Australo-Zealandic, and Panamic provinces.*Terebratulina*.—North European, Lusitanian, North Asiatic, Indo-Pacific, and North American provinces.*Terebratella*.—North European, North Asiatic, Indo-Pacific, Australo-Zealandic, and Magellanic provinces.*Magas*.—Australo-Zealandic province.*Bouchardia*.—Australo-Zealandic and Brazilian provinces.*Megerlia*.—Lusitanian province.*Kraussia*.—Australo-Zealandic and South African provinces.*Morrisia*.—Lusitanian province.*Argiope*.—Lusitanian and Celtic provinces.*Thecidea*.—Lusitanian province.

Summary.

1. Of the thirty-nine species cited in the foregoing analysis, thirty-five belong to the Old World, only four to the New. None of the species are common to both, with the single exception of *Terebratulina caput-serpentis* of the North European and Lusitanian provinces, which ranges in a modified form (*T. septentrionalis*, Couthouy) to the eastern shores of North America. Two species of *Terebratula* have been described by Dr. Gould in Wilkes's 'Exploring Expedition' (*T. caurina* and *putcinata*), from Puget Sound, Oregon; but I have not seen them.

2. The distribution of subgenera illustrates a few characteristic centres of creation. *Megerlia*, *Morrisia*, *Argiope*, and *Thecidea*, all have their home in the Lusitanian province,—one species only, *Argiope cistellula*, passing into the Celtic province, which has no centre of specific creation of its own. *Kraussia* has its home in the South African province, embracing four species. A fifth species, *K. Lamarkiana*, is found in the Australo-Zealandic province; but the apophysis, on which the subgenus is founded, is abnormal in its structure.

3. Of subgeneric types widely removed, *Bouchardia* presents curious instances. *B. tulipa*, a solitary species on the shores of Brazil, is undoubtedly identical in type with *B. filula* and *Cumingii*, which are natives of Australia and New Zealand, though no Faunas of any two provinces can be more generally dissimilar. The same may be said of *Waldheimia* and *Terebratella*; but these subgenera are more abundant in species and individuals, distributed in local centres of creation of more varying specific character.

4. Of specific types widely removed, a notable instance is presented in *Waldheimia globosa* of California, and *W. lenticularis*, a native of New Zealand. Not only are these two very remote species of the same specific type, but the difference of their specific details is scarcely appreciable.

5. The most characteristic assemblages of species are those of *Terebratulina* in the North European and North Asiatic provinces, *Waldheimia* in the Panamic, of *Terebratella* in the Magellanic, and of *Morrisia* and *Argiope* in the Lusitanian province.

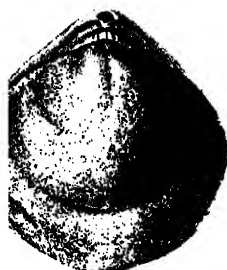
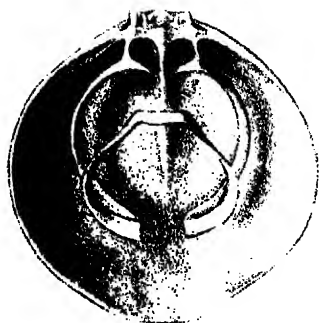
6. Species are fewest within the Tropics. The Indo-Pacific province, which extends from Australia to Japan, and from the Red Sea and east coast of Africa to Easter Island in the Pacific, embracing three-fifths of the circumference of the globe and forty-five degrees of latitude, yields only three species—*Waldheimia picta*, *Terebratulina Cumingii*, and *Terebratella sanguinea*; and of the first two, very few individuals are known.

7. Species, with few exceptions, are very local. The exceptions are *Terebratulina caput-serpentis*, which ranges, as already noticed, from the Arctic to the Mediterranean Seas and to the seas of North America, and is very closely represented in the North Asiatic provinces by *T. Japonica* and *abyssicola*. Another exception to the local distribution of species is presented in *Waldheimia picta*, which is found both at Java and at the Friendly Islands. A third exception is one of similar character: *Terebratella sanguinea* inhabits both the Philippine and Sandwich Islands. And a fourth exception occurs in *Terebratula ura*, collected originally at Guatemala, but of which small specimens, in the British Museum and in Mr. Cuming's collections, have been received from the Falkland Islands.

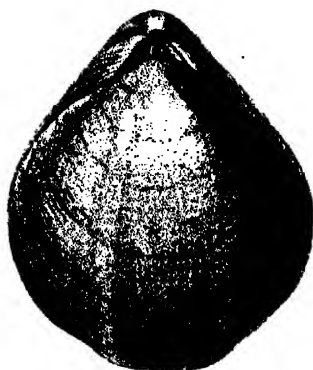
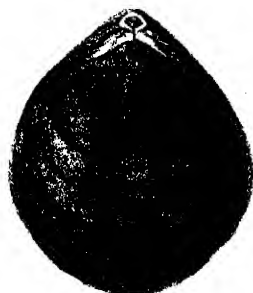
8. Lastly, the Australo-Zealandic province may be noticed as being the most prolific of forms and brilliancy of colour; but all the subgenera of this province, with the exception of *Magas*, have species, though none of the same, in other provinces.

The *Terebratulae* live at various depths, reaching nearly to the deepest limit of molluscan life, attached to corals, stones, fragments of shells, and to one another. The natural position of the animal is to repose upon its back, the smaller or dorsal valve being undermost, and a mooring is secured by means of the byssus-like tendon or pedicle let down from the overhanging ventral valve, which is beaked on one side and perforated for the purpose. The perforation is very liable to erosion and damage from the buffeting of the water, more so in some species than in others, and it becomes more or less enlarged accordingly. To meet this the area below the perforation is constructed of a pair of plates, termed the deltidium, and as the foramen enlarges, the plates separate from each other like a sliding panel. The substance of the shell is invariably punctured throughout, differing generically in this respect from that of *Rhynchonella*, and it is a beautiful object under the microscopic, or even under an ordinary lens.

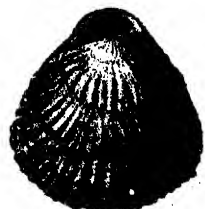
For description of the accompanying plate see Pl. II.



36.



37.



38.



39.

TEREBRATULA

PLATE II.

Species 1. (Pl. 1. Mus. Brit.; Pl. 2. Fig. 1 a, Mus. Metcalfe; Fig. 1 b, Mus. Taylor.)

TEREBRATULA (WALDHEIMIA) FLAVESCENS. *Ter. testâ subtrigono-ovatâ, tenuiculâ, inflatâ, sordidè flavescens, cornéâ, semipellucidâ, rostro obeso, nunc rectiusculo, plus minusve producto, nunc recurro, foramine sub-amplio, deltidio integro, amplo; valvis tripartito-flexuosis, medio lævibus, deinde radiatim plicato-costatis, ad marginem acutè undatis; apophyse elongatâ, latiusculâ, conspicuè reflexâ.*

THE YELLOWISH WALDHEIMIA. Shell somewhat triangularly ovate, rather thin, inflated, dull yellowish-horny, semitransparent, beak stout, sometimes rather straight, and more or less produced, sometimes recurved, foramen rather large, deltidium entire, large; valves tripartitely flexuous, smooth in the middle, then radiately plicately ribbed, sharply zigzag at the edge; loop elongated, rather broad, conspicuously reflected back.

Terebratula flavescens, Lamarek, Anim. sans vert. vol. vii. p. 330.

Terebratula dentata, Lamarek.

Terebratula australis, Quoy.

Waldheimia australis, King.

Terebratula recurva, Quoy.

Hab. South Australia.

This well-known species inhabits the shores of South Australia in great abundance. The fragment of rock, with numerous specimens attached to it, represented in Plate I., was brought by Mr. Jukes from Port Jackson, Australia; and MM. Quoy and Gaimard relate, in their account of the mollusca of the voyage of the 'Astrolabe,' that at Port Western, Bass' Straits, hundreds were brought up at each haul of the dredge, either grouped among themselves by their pedicles or attached to the debris of other shells. The small species mingled with this upon the stone in Plate I., is *T. Lamurekiana*.

Species 2. (Mus. Metcalfe.)

TEREBRATULA (WALDHEIMIA) DILATATA. *Ter. testâ sub-orbiculari, sordidè fuscescente-albâ, rostro lato, breviusculo, subtilus utrinque depresso, foramine amplo, deltidio lirato, partito; valvis gibbosiusculis, lævibus; apophyse valde productâ, elongato-reflexâ.*

THE DILATED WALDHEIMIA. Shell nearly orbicular,

dull brownish-white, beak broad, rather short, depressed beneath on either side, foramen large, deltidium ridged, divided; valves rather gibbous, smooth, loop much produced, elongately reflected.

Terebratula dilatata, Lamarek, Anim. sans vert. vol. vii. p. 330.

Terebratula Gondichaudi, De Blainville.

Hab. Straits of Magellan?

The only specimens known to me of this species are the one here figured, from the collection of Mr. Metcalfe, one of about the same dimensions in the British Museum, and one scarcely so large in the Museum of the Bristol Institution. There are specimens of much larger size, Mr. Davidson informs me, in Paris, in the collections of the Jardin des Plantes and of M. Delessert. The habitat 'Straits of Magellan,' given by Dr. Gray in the British Museum Catalogue, is hardly sufficiently well authenticated.

Species 3. (Fig. a, c, Mus. Metcalfe; Fig. b, Mus. Taylor.)

TEREBRATULA (WALDHEIMIA) GLOBOSA. *Ter. testâ orato-globosâ, olivaceo-cornéâ, rostro producto, sub-acutè incurvo, subtilus utrinque excavato-depresso, foramine parvo, interdum minato, deltidio partito, radiatim sulcato, transversim concentricè rugato; valvis lævibus, obsolete malleatis, obscurissimè tripartitum flexuosis, lineis incrementi plerumque rudibus; apophyse ampliter productâ et reflexâ.*

THE GLOBOSE WALDHEIMIA. Shell ovately globose, olive-horny, beak produced, rather sharply incurved, excavately depressed beneath on either side, foramen small, sometimes minute, deltidium divided, radiately grooved, transversely concentrically wrinkled; valves smooth, obsolete malleated, very obscurely tripartitely flexuous, lines of growth rude; loop largely produced and reflected.

Terebratula globosa, Lamarek, Anim. sans vert. vol. vii. p. 330.

Terebratula Californica, Koch.

Hab. California, Coquimbo.

The only shell that has been assigned to Lamarek's *T. globosa* is a single worn specimen of the well-known Californian species above described, in which the foramen is largely eroded and the deltidium forced open by age or

by some pressure at its place of attachment. No shell has been found to correspond with the figure to which Lamarck refers in the 'Encyclopédie Méthodique,' and I believe it to have been drawn from an old worn specimen like Mr. Cuming's, with the foramen and deltidium eroded, and the rude uneven lines of growth exaggerated into regular concentric ridges. De Blainville gives Lamarck's *T. globosa*, but he does not appear to have had the shell. His figure is merely a copy, with all its infirmities, of the 'Encyclopédie' figure, on a reduced scale. The immature rounded specimen from Mr. Taylor's Collection, represented at Fig. 3 *b*, has the habitat, "de Coquimbo," written upon it in French.

Species 4. (Mus. Cuming.)

TEREBRATULA (WALDHEIMIA) LENTICULARIS. *Ter. testâ ovato-globosâ, inflatâ, flavescente-corneâ, plus minus vividè miniatâ, rostro producto, subaculé incurvo, subtilis utrinque excavato-depressa, foramine parvo, deltidio transversim concentricè rugato; valvis laevibus, obsolete malleatis, obscurissimè tripartitum sternosis, lineis incrementi rudibus; apophyse anaplerè productâ et reflectâ.*

THE LENS-SHAPED WALDHEIMIA. Shell ovately globose, inflated, yellowish-horny, more or less brightly vermilion-stained, beak produced, rather sharply incurved, excavately depressed beneath on either side, foramen small, deltidium transversely concentrically wrinkled; valves smooth, obsolete malleated, very obscurely tripartitely flexuous, lines of growth generally rude; loop largely produced and reflected.

Terebratula lenticularis, Deshayes, Revue Soc. Cuv. 1839; Mag. de Zool. 1841, pl. 41.

Hab. Strait of Fauveau, New Zealand (at a depth of fifteen fathoms.)

Were it not that the habitats of this and the preceding species are well authenticated, it would be difficult to believe that there is any specific difference between them. This is rather lighter inflated growth, and the colour is remarkable, but the characters in other respects are the same in detail throughout. The foramen is probably as small as in *T. globosa*; in all the specimens of *T. lenticularis* that I have seen it is more or less eroded, according to the circumstances of its attachment. The loop is precisely the same in both species.

Species 5. (Fig. *a*, Mus. Cuming; Fig. *b*, *c*, Mus. Metcalfe.)

TEREBRATULA (WALDHEIMIA) GRAYI. *Ter. testâ subtrigono-orbiculari, gibbosâ, rudî, radiatim costatâ, costis irregularibus, subdistantibus, obscure squamatis, versus marginem sæpe bipartitis, livido-olivaceâ vel flavescente, costis plus minus vividè miniatis aut sanguineo-tinctis, rostro brevissimo, obtuso, foramine peramplum, semper plus minus eroso, deltidio peramplum, medio latè partito; valvis valde inæqualibus, dorsali planiusculâ, ventrali valde convexâ; apophyse productâ et reflectâ.*

GRAY'S WALDHEIMIA. Shell subtriangularly orbicular, gibbous, rude, radiately ribbed, ribs irregular, rather distant, obscurely scaled, often divided towards the margin, livid-olive or yellowish, ribs more or less brightly stained with vermilion or blood-red, beak very short, obtuse, foramen very large, always more or less eroded, deltidium very large, broadly divided in the middle; valves very unequal, dorsal rather flat, ventral gibbously convex; loop produced and reflected.

Terebratula Grayi, Davidson, Pro. Zool. Soc. 1852, p. 76. pl. 14. f. 1 to 3.

Hab. Strait of Corea; Belcher.

In a dozen specimens of this beautiful species now before me, in different stages of growth, collected in the Strait of Corea by Admiral Sir Edward Belcher during the voyage of the 'Samarang,' it is curious to observe the use of the deltidium in *Terebratula*. The foramen of the shell naturally becomes more or less eroded and enlarged according to the roughness with which the creature is buffeted about in its place of attachment; and the deltidium in those *Terebratulae* of which the beak is not much produced, is in two pieces, which separate from each other, with the enlargement of the foramen, like a sliding panel. In very young specimens of *T. Grayi* the deltidium plates meet in the middle, and the beak of this species being very short, the foramen soon erodes and enlarges, so much so that in adult specimens the deltidium plates are parted from each other to the distance of a quarter of an inch. The ribs of *T. Grayi* are not really scaled, but scales are formed on them by the overlapping of the concentric lines of growth, and the colour is of deeper tone at these points. We are indebted to Mr. Davidson for distinguishing this species from the old *Anomia rubra* of Pallas, which belongs to the subgenus *Kraussia*. It is smaller, and has not a looped apophysis.



7a



7b



TEREBRATULA.

PLATE III.

Species 6. (Mus. Cuming.)

TEREBRATULA (WALDHEIMIA) CRANIUM. *Ter. testâ ovato-globosâ, lœvigatâ, florescente-albâ, cornâ, rostro brevi, tumidiusculo, foramine subamplo, imperfecto, deltidio aut parco aut nullo; valvis ambabus tumido-convexis, ad marginem paululum contractis; apophyse subelongatâ, reflectâ.*

THE SKULL WALDHEIMIA. Shell ovately globose, smooth, yellowish-white, horny, beak short, rather swollen, foramen rather large, incomplete, deltidium either small or none; both valves tumidly convex, a little contracted at the margin; loop rather elongated, reflected.

Terebratula cranium, Müller, Zool. Dan. Prod. p. 209.

Anomia cranium, Gmelin.

Terebratula vitrea, Fleming.

Hab. Norway; Finmark. East of Zetland; Fleming, Barlee.

Dr. Gray quotes *Anomia vitrea*, Chemnitz, as a synonym of this species, incorrectly. Dr. Fleming named a specimen, in the 'Edinburgh Encyclopædia' and in his 'Philosophy of Zoology,' *T. vitrea*, but the *Anomia vitrea* of the Conchylien Cabinet is the true *vitrea*, Sp. 8. *T. cranium* is a Scandinavian species, and is only included in the British fauna on the grounds of its discovery, on two different occasions, about thirty miles east of Zetland, by Dr. Fleming and Mr. Barlee.

Species 7. (Fig. a, b, Mus. Cuming.)

TEREBRATULA (TEREBRATULINA) RADIATA. *Ter. testâ subtrigono-oratâ, gibbosâ, versus marginem flexuosonudatâ, subpellucido-albâ, sparsim nigro radiatâ, rostro brevi, foramine amplo, imperfecto, deltidio parvo, viz nullo; valvis radiatim densè lineari-sulcatis, sulcis irregularibus; apophyse parvâ, brevî, haud reflectâ.*

THE RAYED TEREBRATULINA. Shell triangularly ovate, gibbous, flexuously waved towards the margin, semi-transparent white, sparingly rayed with black, beak short, foramen large, incomplete, deltidium small, scarcely any; valves densely radiately linearly grooved, grooves irregular; loop small, short, not reflected.

Hab. Strait of Corea?

An interesting species, of the same subgeneric type as *T. caput-serpentis*, flexuously waved towards the margin,

and rayed in a very characteristic manner with broad pencils of black. Mr. Cuming possesses two or three specimens, all exactly alike, procured, he fancies, from the dredgings of Sir E. Belcher in the Strait of Corea.

Species 8. (Fig. a, c, Mus. Cuming; Fig. b, Mus. De Burgh.)

TEREBRATULA VITREA. *Ter. testâ subquadrato-globosâ, lœniculâ, pellucido-albâ, vitreâ, rostro tumido, breviter incurro, foramine parvisculo, deltidio parco, viz nullo; valvis ambabus tumido-convexis, lœvibus aut densè concentricè minutissimè striatis; apophyse parvâ, simplici.*

THE GLASSY TEREBRATULA. Shell somewhat squarely globose, rather thin, transparent-white, glassy, beak swollen, shortly incurved, foramen rather small, deltidium small, scarcely any; both valves tumidly convex, smooth, or densely concentrically very minutely striated; loop small, simple.

Anomia vitrea, Born, Test. Mus. Cas. p. 119, p. 116. vign.

Anomia terebratula, Gmelin.

Terebratula vitrea, Lamarck.

Anomia terebratula, Dillwyn.

Terebratula canthya, Philippi.

Hab. Mediterranean (in nullipore mud at a depth of from ninety-two to two hundred and fifty fathoms); E. Forbes. Vigo Bay (at a depth of forty fathoms): M'Andrew.

This is the type of *Terebratula* proper, and there is only one other recent species, *T. aca*. They represent, however, a series of more than a hundred fossil species.

Species 9. (Fig. a, Mus. De Burgh; Fig. b, Mus. Taylor.)

TEREBRATULA (WALDHEIMIA) PICTA. *Ter. testâ ovato, obscurè tripartitâ, anticè et posticè subattenuatâ, lœvigatâ, sanguineo-aurantiâ aut flavicante, strigis maculisque pallidis irregularibus paucis lœvigatâ, rostro parvo, incurro, foramine medioeri, deltidio perangusto concentricè rugato; valvis subæqualibus, medio prominulis; apophyse elongatâ, recurvâ.*

THE PAINTED WALDHEIMIA. Shell ovate, obscurely tripartite, anteriorly and posteriorly a little attenuated, smooth, blood-stained orange or yellowish, speckled

with a few irregular pale spots and streaks, beak small, incurved, foramen middling, deltidium very narrow, concentrically wrinkled; valves nearly equal, prominent in the middle; loop elongated, recurved.

Anomia picta, Chemnitz, Conch. Cab. vol. 11. p. 247. pl. 203. f. 2011, 2012.

Terebratula sanguinea, Sowerby (in 'Genera of Shells,' not in 'Thesaurus').

Terebratula erythroleuca, Quoy.

Hab. Java.

All the specimens that I have seen of this very prettily painted *Waldheimia* agree precisely with Chemnitz's original figure in the Conchylien Cabinet. There appears to be little or no variation in the species. Dr. Gray quotes Mr. Sowerby's *T. rubella* as a variety of *T. picta*, but I have fully verified Mr. Davidson's observation, that *T. rubella* has the apophysary system of *Terebratella*.

Species 10. (Mus. Cuming.)

TEREBRATULA (WALDHEIMIA) SEPTIGERA. *Ter. testā subquadrato-ovatā, medio versus marginem anticam depressā, pellucido-albā, cornēā, lævigatā, rostro subattenuatē producto, foramine medioeri, integro, deltidio integro, longitudinaliter rugato; valvis densè minutè concentricè striatis ad marginem anticam sinuatis; apophyse elongatā, recurvā, seplo valvæ dorsalis prominente.*

THE SHELVED WALDHEIMIA. Shell somewhat squarely ovate, depressed in the middle towards the anterior margin, transparent-white, horny, smooth, beak rather attenuately produced, foramen moderate, entire, deltidium entire, longitudinally wrinkled; valves densely minutely concentrically striated, sinuated at

the anterior margin; loop elongated, recurved, septum of the dorsal valve prominent.

Terebratula septigera, Loeven, Index Moll. Scand. p. 29.

Hab. Norway; Finnmark.

This species is undoubtedly very closely allied to *T. cranium*. The internal septum, which is characteristic of the dorsal valve of the *Waldheimia* section, is more prominent, but the most striking features of the shell are its produced beak, entire foramen, and distinct corrugated deltidium.

Species 11. (Mus. Cuming.)

TEREBRATULA UVA. *Ter. testā oblongo-ovatā, posticè utrinque compressā, pellucido-albā, cornēā, lævigatā, rostro tumido-producto, incurvo, foramine peramplo, viz integro, deltidio parvo vel obsoleto; valvis inæqualibus, centrali multo majore, ambabus medio gibbosis; apophyse brevi.*

THE GRAPE TEREBRATULA. Shell oblong-ovate, posteriorly compressed on each side, transparent-white, horny, smooth, beak tumidly produced, incurved, foramen very large, scarcely entire, deltidium small or obsolete; valves unequal, the ventral much the larger, both gibbous in the middle; loop short.

BRODERIP, Pro. Zool. Soc. 1833, p. 124.

Hab. Bay of Tehuantepec, Guatemala (dredged from a depth of from ten to twelve fathoms, sandy mud, attached to a dead sea-worn bivalve); Captain Dare.

This curiously compressed species, dredged in the Central American waters of the Pacific, is the only *Terebratula* proper, besides the typical *T. vitrea* of the Mediterranean. There is a second specimen of it in the collection of Mrs. De Burgh.



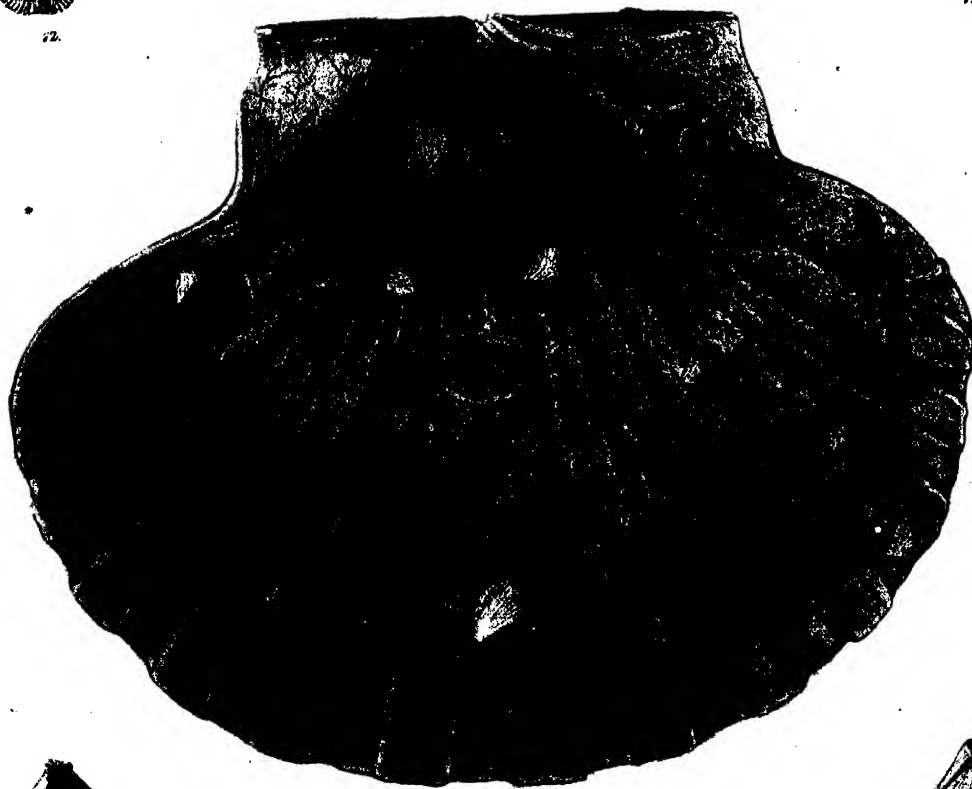
22.



23.



24.



25.



26.



27.



TEREBRATULA.

PLATE IV.

Species 12. (Mus. Cuming.)

TEREBRATULA (TEREBRATULINA) CUMINGII. *Ter. testâ quadrato-ovalâ, subpentagonali, opaco-albâ, radiatim lirâtâ, liris aliis versus marginem intervenientibus, omnibus tenuè crenulatis, rostro suberectè producto, obliquè truncato, foramine amplo, imperfecto, deltidio ferè obsoleto; valvis subgibboso-convexis, margine serratis; apophyse parvâ, anelliformi.*

CUMING'S TEREBRATULINA. Shell squarely ovate, nearly pentagonal, opaque-white, radiately ridged, with other ridges intervening towards the margin, all finely crenulated, beak somewhat erectly produced, obliquely truncated, foramen large, incomplete, deltidium almost obsolete; valves rather gibbously convex, serrated at the margin; loop small, anelliform.

DAVIDSON, Pro. Zool. Soc. 1852, p. 79. pl. 14. f. 17 to 19.

Hab. China Seas.

An extremely characteristic well-defined species. The radiating ridges do not all diverge together from the beak; a new ridge commences between each former ridge as the space enlarges to receive it.

Species 13. (Mus. Cuming.)

TEREBRATULA (TEREBRATULINA) CANCELLATA. *Ter. testâ ovato-oblongâ, subflexuosâ, livido-fuscâ, radiatim densè linearis-sulcatâ, sulcis striis concentricis incrementi decussatis, rostro subproducto, foramine amplo, integro, deltidio rugoso, indiviso; valvis inæqualibus, dorsali planiusculâ; apophyse brevi.*

THE CANCELLED TEREBRATULINA. Shell ovately oblong, rather flexuous, livid-fuscon, radiately densely linearly grooved, grooves decussated by concentric striæ of growth, beak rather produced, foramen large, entire, deltidium rough, undivided; valves unequal, the dorsal rather flat; loop short.

Terebratula cancellata, Koch, Kuster, Conch. Cab. vol. vii. pl. 2 b. f. 11 to 13.

Hab. —?

Of a peculiar livid-brown colour, fully distinguished from *T. caput-serpentis* among other characters by its square form and produced beak, with entire foramen and deltidium.

Species 14. (Mus. Cuming.)

TEREBRATULA (TEREBRATULINA) ABYSSICOLA. *Ter. testâ trigono-pyriformi, aurantio-carnèâ, radiatim obsolete lirâtâ, liris distantibus, striis bifurcatis numerosis intervenientibus, rostro obtusè producto, foramine subamplo, imperfecto, deltidio obsoleto; apophyse brevi.*

THE DEEP-DWELLING TEREBRATULINA. Shell triangularly pear-shaped, orange flesh-colour, radiately obsolete ridged, ridges distant, with numerous bifurcated striæ coming between them, beak obtusely produced, foramen rather large, incomplete, deltidium obsolete; loop short.

Terebratula abyssicola, Adams and Reeve, Moll. Voy. Samarang, p. 72. pl. 21. f. 5.

Terebratulina abyssicola, David-on.

Hab. Cape of Good Hope (dredged at the depth of 120 fathoms); Betscher.

The foramen in this species is not entire, as described in the Museum Catalogue. It is incomplete, as in *T. caput-serpentis*, and the deltidium is almost obsolete.

Species 15. (Fig. a, Mus. nost.; Fig. b, Mus. Cuming.)

TEREBRATULA (TEREBRATULINA) CAPUT-SERPENTIS.

Ter. testâ trigono-pyriformi, subpentagonali, albida, interdum ferrugineo tinctâ, densè radiatim lirâtâ, liris bifurcatis, subgranulatis, rostro attenuato-producto, obliquè truncato, foramine subamplo, imperfecto, deltidio fere obsoleto, valvis ambabus convexis interdum anticè flexuoso, compressis, ad latera subauritis; apophyse brevi.

THE SNAKE'S-HEAD TEREBRATULINA. Shell triangularly pear-shaped, somewhat pentagonal, whitish, sometimes rust-stained, densely radiately ridged, ridges bifurcated, slightly granuled, beak attenuately produced, obliquely truncated, foramen rather large, incomplete, deltidium almost obsolete, both valves convex, sometimes flexuously compressed in front, somewhat eared at the sides; loop short.

Anomia caput-serpentis, Linnaeus, Syst. Nat. p. 1153.

Anomia retusa, Linnaeus.

Anomia pubescens, Linnaeus.

Terebratula pubescens, Müller.

Terebratula caput-serpentis, Lamarck.

Terebratula costata, Lowe.

Terebratula aprita, Fleming.

Terebratula striata, Leach.

Terebratula septentrionalis, Courthouy.

Terebratulina caput-serpentis, D'Orbigny.

Terebratulina cornea, D'Orbigny.

Delthyris spatula, Menke.

Hab. Norway, North America, North Britain, Mediterranean (at a depth of from ten to fifty fathoms).

This species ranges throughout the European Seas from the Arctic to the Mediterranean, mostly at considerable depths, and it appears abundantly in a more finely striated state in the northern seas of the United States. The North American form is given as a distinct species in the Museum Catalogue with Courthouy's name, *T. septentrionalis*, but it is untenable, as Dr. Gould himself admits in his Report of the Invertebrata of Massachusetts. The shell has sometimes a slight downy epidermis upon it. The Peeten valve in our Plate, with several small specimens attaching to it, has been brought up in the dredge from the sea-bottom, and serves to illustrate the habit of the species. The dorsal valve, erroneously numbered 15 c, belongs to *T. Japonica*, Fig. 16, but the loop is the same.

Species 16. (Fig. 16 and 15 c, Mus. Cuming.)

TEREBRATULA (TEREBRATULINA) JAPONICA. *Ter. testā oblongo-oratā, subangulatā, gibbosā, pellucido-albā, cornēā, densè radiatim lineari-sulcatā, sulcis hic illic bifurcatis, rostro tumido-producto, deinde obliquè truncato, foramine subamplo, imperfecto, deltidio obsoleto, valvis globoso-convexis, ventrali versus rostrum ad latera compressā; apophyse parvā, anelliformi.*

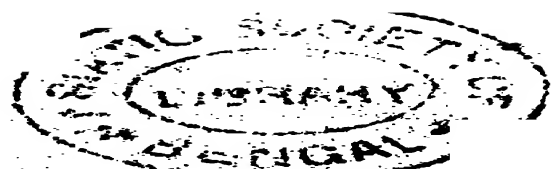
THE JAPAN TEREBRATULINA. Shell oblong ovate, rather narrow, gibbous, transparent white, horny, densely radiately linearly grooved, grooves here and there bifurcated, beak tumidly produced, then obliquely truncated, foramen rather large, incomplete, deltidium obsolete, valves globosely convex, ventral valve compressed at the sides towards the beak; loop small, anelliform.

Terebratula Japonica, Sowerby, Thes. Conch. vol. i. p. 344. pl. 68. f. 7, 8.

Terebratula angusta, Adams and Reeve.

Hab. Corea, Japan.

T. Japonica is very closely allied to *T. caput-serpentis*, and is without doubt its representative in the Corean and Japanese waters.





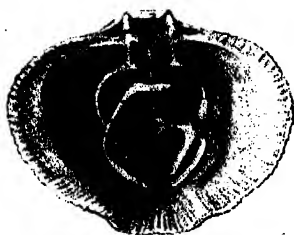
18.



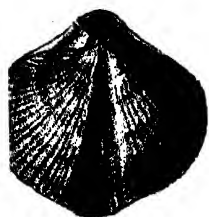
17.



19.



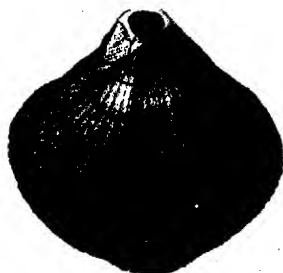
20a



21a.



21b.



20b



21c.



21d.



22.

TEREBRATULA.

PLATE V.

Fig. 17. (Mus. Cuming.)

TEREBRATULA (TEREBRATELLA) BOUCHARDII. *Ter. testâ suborbiculari, crassiusculâ, sordide flavescente, subrugosâ, tripartito-flexuosâ, rostro suberecto, subtilis utrinque concavo-depresso, foraminis amplo, deltidium subamplo, subpartito; valvâ dorsali medio subdepressâ; apophyse elongatâ, dupliciter affixâ.*

BOUCHARD'S TEREBRATELLA. Shell somewhat orbicular, rather thick, dull-yellowish, rather rough, tripartitely flexuous, beak somewhat erect, concavely depressed beneath on each side, foramen large, deltidium rather large, a little divided; dorsal valve slightly depressed in the centre; loop elongated, doubly attached.

Terebratella Bouchardii, Davidson, Ann. and Mag. Nat. Hist. 1852, p. 367; Pro. Zool. Soc. pl. 14. f. 4 to 6.

Hab. — ?

This species is founded upon a single specimen of rather rude growth in Mr. Cuming's collection, but there is no other form of *Terebratula* with the doubly attached loop to which it can be assigned.

Species 18. (Mus. Metcalfe.)

TEREBRATULA (TEREBRATELLA) SUFFUSA. *Ter. testâ orbiculari, subgibbosâ, fuscâ, quasi epidermide indutâ, carneo-roseo suffusâ, rostro medioeris, subtilis utrinque concavo-depresso, oblique truncato, foramine amplo, deltidio concentricè rugato, medio subpartito; valvis medio tumido-convexis, versus marginem subobsolete plicato-costatis, costis irregularibus, hic illic malleatis; apophyse dupliciter affixâ.*

THE SUFFUSED TEREBRATELLA. Shell orbicular, rather gibbous, fuscous as though covered with an epidermis, suffused with flesh rose-colour, beak moderate, concavely depressed beneath on each side, truncated obliquely, foramen large, deltidium concentrically wrinkled, slightly divided in the middle; valves tumidly convex in the middle, rather obsoletely plicately ribbed towards the margin, ribs irregular, here and there malleated; loop doubly attached.

Hab. — ?

The only species with which this shell has any real affinity is *T. dorsata*; yet after a most patient comparison of it with specimens of *T. dorsata* in many varieties of different ages, I cannot bring my mind to any other conclu-

sion than that it is distinct. In all the varieties of *T. dorsata*, among which I include *T. Chilensis*, Broderip, and *T. flexuosa* and *T. Sowerbyi*, King, there is a characteristic depression down the middle of the dorsal valve, and the valve obtains the form of a tripartite shield, so to speak, each having its separate fasciculus of ribs. In *T. suffusa* there is no indication whatever of this depression; the valve is unusually convex in the middle, and the ribs are peculiarly malleated, interrupted, and irregular. The specimen is in good condition, not uniformly stained with rose, like young specimens of the rose-coloured variety of *T. dorsata*, but suffused with a characteristic blush of flesh-rose, conspicuously so in the interior, and externally through a coating, which has very much the aspect of a fibrous epidermis.

Species 19. (Mus. Cuming.)

TEREBRATULA (TEREBRATELLA) LABRADORENSIS. *Ter. testâ orbiculari, subdepressâ, pellucido-albâ, solidiusculâ, radiatim costatâ, costis subamplicis, rostro tumido, subtilis utrinque concavo-depresso, oblique truncato, foramine magno, integro, deltidio amplo, medio subpartito; valvis ambabus regulariter convexis; apophyse elongatâ, dupliciter affixâ.*

THE LABRADOR TEREBRATELLA. Shell orbicular, somewhat depressed, transparent white, rather solid, radiately ribbed, ribs rather large, beak swollen, concavely depressed beneath on each side, obliquely truncated, foramen large, entire, deltidium large, slightly divided in the middle; both valves regularly convex; loop elongated, doubly attached.

Terebratula Labradorensis, Sowerby, Thes. Conch. vol. i. p. 362. pl. 71. f. 89, 90.

Terebratella Labradorensis, Davidson.

Hab. Labrador; Goodsir.

A rather depressed transparent white orbicular species, of solid structure, ribbed with more strength and regularity than is common in the genus.

Species 20. (Fig. a, b, Mus. Cuming.)

TEREBRATULA (TEREBRATELLA) CRUENTA. *Ter. testâ subtrigono-globosâ, inflatâ, tripartito-flexuosâ, medio depressâ, aurantio-cruentâ, ad lineas incrementi intensâ,*

rostro tumido-prominente, incurvo, foramine amplo, integro, deltidio amplo, rugato, indiviso; valvis subæqualibus, undique radiatim latis, ad marginem sinuatis; apophyse elongatâ, dupliciter affixâ.

THE BLOOD-STAINED TEREBRATULA. Shell somewhat triangularly globose, inflated, tripartitely flexuous, depressed in the middle, orange-red, deep at the lines of growth, beak tumidly prominent, incurved, foramen large, entire, deltidium large, wrinkled, undivided; valves nearly equal, radiately ridged throughout, sinuated at the margin, loop elongated, doubly attached.

Terebratula cruenta, Dillwyn, Syn. p. 295.

Terebratella cruenta, Gray.

Terebratula sanguinea, Leach, Quoy.

Terebratula rubra, Sowerby.

Terebratula Zelandica, Deshayes.

Terebratella Zelandica, Davidson.

Hab. Cook's Straits, New Zealand (in fifteen fathoms).

In this fine species there is little or no variation either of form or colour, and it may be at once distinguished from any other. Though unknown to Lamarck, and not till lately to Deshayes or Sowerby, it was described nearly half a century ago by Dillwyn, and admirably figured about the same time by Leach, in his 'Zoological Miscellany.'

Species 21. (Fig. a, b, c, d, Mus. Cuming.)

TEREBRATULA (TEREBRATELLA) MAGELLANICA. *Ter. testâ subtrigono-ovatâ, subdepressâ, tripartito-flexuosâ, medio latè concavo-impressâ, flavescens-corneâ, interdum rosaceâ, rostro breviusculo, subtus utrinque concavo-planato, truncato, foramine amplo, imperfecto, deltidio mediocri, partito; valvis plus minus tripartitim radiato-latis, ad marginem sinuatis; apophyse elongatâ, reflexâ, dupliciter affixâ.*

THE MAGELLAN TEREBRATULA. Shell somewhat triangularly ovate, rather depressed, tripartitely flexuous, broadly concavely impressed in the middle, yellowish-horny, sometimes tinged with rose, beak rather short, concavely flattened beneath on each side, truncated, foramen large, incomplete, deltidium moderate, divided; valves more or less tripartitely radiately ridged, sinuated at the margin; loop elongated, reflected, doubly attached.

Anomia striata Magellanica, Chemnitz, Conch. Cab. vol. viii. p. 101. pl. 78. f. 710, 711.

Anomia dorsata, Gmelin.

Terebratula dorsata, Lamarck.

Terebratula flexuosa, King.

Terebratula Sowerbyi, King.

Terebratula Chilensis, Broderip.

Delthyris dorsata, Menke.

Terebratella dorsata, Davidson.

Hab. Straits of Magellan; King. Valparaiso; Cuming.

Three years before Gmelin gave the name of *Anomia dorsata* to this species, it was fully described and figured by Chemnitz with the name of *Magellanica*, which had already been given to it in French by Davila and Favart D'Herbigny. Mr. Broderip's *T. Chilensis* and Captain King's *T. flexuosa* and *Sowerbyi* are clearly varieties of it, the last being of a characteristic yellowish-red colour, which in very young specimens is a delicate rose-pink.

Species 22. (Mus. Norris.)

TEREBRATULA (TEREBRATELLA) TRANSVERSA. *Ter. testâ transversè ovatâ, flexuoso-contortâ, medio concavo-impressâ, sordide flavescens-albâ, rostro breviusculo, subtus utrinque concavo-planato, truncato, foramine per-amplo, deltidio parvo, latè diviso; valvis levibus, lineis incrementi versus marginem rugatis.*

THE TRANSVERSE TEREBRATULA. Shell transversely ovate, flexuously contorted, concavely impressed in the middle, dull yellowish-white, beak rather short, concavely flattened beneath on each side, truncated, foramen very large, deltidium small, widely divided; valves smooth, wrinkled with lines of growth towards the margin.

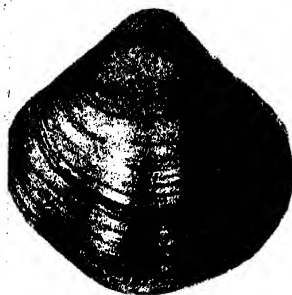
Terebratula transversa, Sowerby, Thesaurus Conch. vol. i. p. 361. pl. 72. f. 114, 115.

Hab. —?

I doubt if this is anything more than a monster of very antiquated contorted growth of the preceding species. I have not seen the specimen to which Mr. Sowerby alludes in the collection of M. Janelle, but I find evident traces in Mr. Norris's specimen, of the radiating ridges which are so characteristic in *T. dorsata*, and which in *T. transversa* would appear, at first sight, to be wanting.



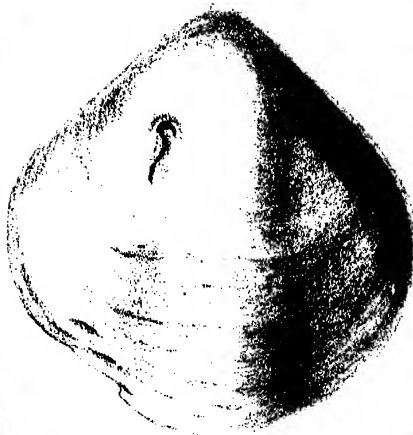
23a.



26



2c



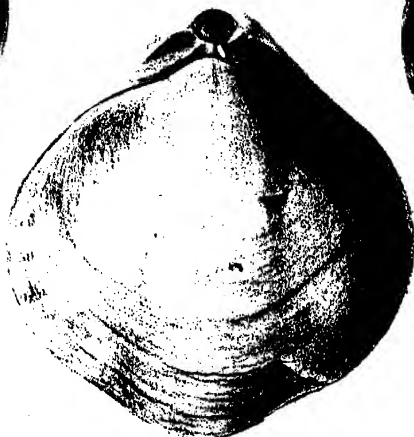
23b



3d



3e



23c

TEREBRATULA.

PLATE VI.

Species 2. (Fig 2 *b*, 2 *c*, Mus. Jardin des Plantes, Paris.)

TEREBRATULA (WALDHEIMIA) DILATATA. Since the publication of the first four Plates of this Monograph I have been favoured by Professor Valenciennes, the esteemed pupil and successor of Lamarck, and, it should be added, at the friendly suggestion of Professor Milne-Edwards, with the original type of this and the following species. There has been no authentic identification in this country of the *T. dilatata* and *globosa* of the 'Animaux sans Vertèbres,' and it is with much pleasure that I am able to give figures of the original specimens. It happens that they were named and described more than forty years ago by M. Valenciennes himself for Lamarck when that distinguished naturalist, whose name commands our utmost sympathy and respect, commenced to be afflicted with blindness. "Ce sont les exemplaires originaux," says M. Valenciennes in his letter to me, "de mon travail sur les mollusques, et peut-être mon premier sur les animaux, car il date de 1819." It is therefore due to M. Valenciennes that the authority attached to the names of these species should be, not *Lam.*, but *Val. apud Lam.* The inscription of M. Valenciennes on the back of the tablet is as follows:—"Exemplaire décrit en 1819 lorsque j'ai fait la monographie du genre Terebratula de Lamarck; déjà était aveugle. C'est la coquille de la collection de M. Dufresne, lequel a donné cette coquille au Muséum, en échange d'autres espèces. C'est donc l'espèce que j'ai nommée *Terebratula dilatata*, Val. apud Lam." The shell agrees precisely with that already figured for the species at Plate II. from the collection of Mr. Metcalfe, but it is of still larger size.

Species 3. (Fig. 3 *d*, 3 *e*, Mus. Jardin des Plantes, Paris.)

TEREBRATULA (WALDHEIMIA) GLOBOSA. I was much gratified, on receiving this shell, the original specimen described and named by Valenciennes and so clumsily figured in the 'Encyclopédie Méthodique,' to find that I was right in having assigned to the species the well-known *T. Californica*, Koch. Though not uncommon in collections, it had never occurred to writers on *Terebratula* (the latest being Mr. Davidson and Dr. Gray) that this species was

the *T. globosa* of the 'Animaux sans vertèbres.' A comparison of the original type removes all doubt on the subject, and the species may henceforth be known by the name inscribed on the French tablet, "*Terebratula (Waldheimia) globosa*, Val. apud Lam. Anim. sans vert. vol. v. 1819; Enc. Méth. pl. 239. f. 2."

Species 23. (Fig. 23 *a*, *b*, *c*, Mus. Jardin des Plantes, Paris.)

TEREBRATULA PHYSEMA. *Ter. testâ latè globosâ, tenuiculâ, valdè inflatâ, sordidè fulvescente-albâ, rostro amplo, modicè producto, subtilis utrinque escarato-depresso, foramine ampliter eroso, deltidio subpartito, radialim rudè sulcato; valvis latis, levibus, obsolete malleatis, vir flexuosis, lineis incrementi versus marginem subrudibus; apophyse (diruptâ).*

THE INFLATED TEREBRATULA. Shell broadly globose, rather thin, very much inflated, dead fulvous-white, beak large, moderately produced, excavately depressed beneath on either side, foramen largely eroded, deltidium slightly divided, radiately rudely grooved; valves broad, smooth, obsoletely malleated, scarcely flexuous, lines of growth somewhat rude towards the margin; apophysis (broken away).

VALENCIENNES, MS. in Mus. Jardin des Plantes, Paris. *Lab.* Coquimbo; Gaudichaud.

This fine shell, belonging to the collection of the Museum of the Jardin des Plantes, was collected by M. Gaudichaud in 1833 at Coquimbo, and had been regarded as a *T. dilatata*. M. Valenciennes, when selecting for me the specimens figured in this Plate, observed that it differed from that species, and named it *T. physema*, with the following remark:—"Grande et belle espèce de Terebratule (*Waldheimia*) confondue avec mon *T. dilatata*, mais bien distincte, rapportée de Coquimbo en 1833 par M. Gaudichaud, et donnée par lui à M. Férussac. Achetée en 1837 avec la collection."

It would be satisfactory if the species could be confirmed by the discovery of further specimens. It is intermediate in its characters between *T. dilatata* and *globosa*, inclining rather to the latter species, of which it may prove to be a colossal broadly inflated variety.



24.



25a



25b



25c



26a.



26b.



27a



27b.



28a.



28b.

TEREBRATULA.

PLATE VII.

Species 24. (Mus. Cuming.)

TEREBRATULA (TEREBRATELLA) SPITZBERGENSIS. *Ter. testā suboblongo-ovata, tenuiculā, pellucido-albā, cornēā, rostro producto, erecto-incurvo, foramine amplo, subtrigono, deltidio elongato, partito; valvis ambabus modicè convexis, levibus, lineis incrementi concentricè latis; apophyse breviusculā, reflexā, septo valdè prominente.*

THE SPITZBERGEN TEREBrATULA. Shell somewhat oblong-ovate, rather thin, transparent white, horny, beak produced, erectly incurved, foramen large, rather triangular, deltidium elongated, divided; both valves moderately convex, smooth, concentrically ridged with lines of growth; loop short, reflected, septum very prominent.

DAVIDSON, Pro. Zool. Soc. 1852, p. 78.

Hab. Spitzbergen.

This narrowly-ovate species, in which the beak is conspicuously produced and curved in an erect manner, is of the same transparent horny tenuity as *T. vitrea*, more largely punctured. It is very much smaller, and has the loop of *Terebratella*, elongate and reflected, attached to a central septum of more than usual prominence.

Species 25. (Fig. a, Mus. Cuming; Fig. b, c, Mus. Taylor.)

TEREBRATULA (TEREBRATELLA) SANGUINEA. *Ter. testā ovalā vel trigono-ovalā, plus minus trifariam flexuosā, tenuiculā, albidā, ovidē sanguineo radialim interruptā lentiginosā, rostro breviusculo, foramine interdum integro, interdum deltidio partito; valvis ambabus convexis, versus umbones medio subproductis; apophyse parvā, reflexā, septo parvo, brevissimo.*

THE BLOOD-STAINED TEREBrATELLA. Shell ovate or triangularly ovate, more or less tripartitely flexuous, rather thin, whitish, radiately interruptedly freckled with bright blood-colour, beak rather short, foramen sometimes entire, sometimes with the deltidium divided; both valves convex, rather produced in the middle towards the umboes; loop small, reflected, septum small, very short.

Anomia sanguinea, Chemn. Conch. Cab. vol. viii. p. 96. pl. 78. f. 706.

Terebratula sanguinea, Sowerby.

Terebratula pulchella, Sowerby.

Terebratella sanguinea, Davidson.

Megerlia pulchella, Davidson.

Hab. Philippine and Sandwich Islands.

An examination of more than a dozen specimens of this charming species, most of them with the soft parts macerated so as to afford excellent comparisons of the loops, has convinced me that Mr. Sowerby's *T. pulchella* (*Megerlia pulchella*, Davidson) is merely a variety of the old *Anomia sanguinea* of Chemnitz, in which the deltidium plates are forced apart by circumstances in its mode of attachment in a manner to expand the foramen. The apophysis is the same in both forms. It differs materially from the typical apophysis of *Terebratella*, but is nearer to it than to the apophysis of *Megerlia*. The loop is comparatively small and shortly reflected. It is supported on a cross attachment, but the septum leading to this is very small, so that the whole apophysis passes scarcely more than half-way into the valve. It may be said to be intermediate between *Terebratella* and *Terebratula* proper, rather than *Megerlia*. The bright blood-red painting with which both valves are radiately freckled is not an unimportant characteristic of the species.

Species 26. (Fig. a, Mus. Cuming; Fig. b, Mus. Brit.)

TEREBRATULA (TEREBRATELLA) RUBELLA. *Ter. testā suboblongo-ovalā, ad marginem obscure trigonā, rubellā vel aurantio-rubrā, rostro modicè producto, foramine parvisculo, deltidio plerumque subpartito; valvis ambabus convexiusculis, medio tumidis; apophyse subelongatā, dupliciter affixā.*

THE RUDDY TEREBrATELLA. Shell rather oblong-ovate, obscurely triangled at the margin, ruddy or orange-red, beak moderately produced, foramen rather small, with the deltidium mostly a little divided; both valves rather convex, swollen in the middle; loop rather elongated, doubly attached.

Terebratula rubella, Sowerby, Thesaurus Conch. vol. i. p. 350. pl. 69. f. 40-42.

Terebratella rubella, Davidson.

Hab. Bass's Straits, Australia (dredged from a depth of twenty-seven fathoms); Calvert.

Though uniformly of smaller size, this species very much resembles, both in form and colour, *T. (Waldheimia) picta*

but it has clearly the doubly-attached loop of *Terebratella*. Mr. Sowerby records Japan as its habitat; no authority is, however, given for it, and the shell has the appearance of belonging to a warmer latitude. The specimen in the British Museum, represented at Fig. 26 b, was dredged by Mr. Calvert, a shell-dealer of Great Russell Street, at Bass's Straits, Australia, in twenty-seven fathoms water.

Species 27. (Fig. a, Mus. Brit.; Fig. b, Mus. Taylor.)

TEREBRATULA (TEREBRATELLA) RUBICUNDA. *Ter. testā subtrigono-ovata, intense rubrā, versus rostrum pallidā, interdum omnino albā, rostro tumido-producto, suberecto, foramine amplo, interdum integro, interdum deltidio partito; valvis gibbosis, medio flexuoso-canaliculatis; apophyse elongatā, conspicuè dupliciter affixā.*

THE DEEP-RED TEREBRATELLA. Shell somewhat triangularly ovate, deep-red, pale towards the beak, sometimes altogether colourless, beak tumidly produced, rather erect, foramen large, sometimes entire, sometimes with the deltidium divided; valves gibbous, flexuously channelled in the middle; apophysis elongated, conspicuously doubly attached.

Terebratula rubicunda, Solander, Sowerby, Thesaurus Conch. vol. i. p. 351. pl. 70. f. 45-47.

Testa juvenis, *Terebratula inconspicua*, Sowerby.

Hab. New Zealand.

Of a somewhat rude and solid growth, stained with very deep red, pale towards the beak, and sometimes altogether colourless. It has been dredged abundantly at New Zea-

land. Mr. Sowerby's *T. inconspicua* is evidently founded on small, immature specimens.

Species 28. (Fig. a, b, Mus. Taylor.)

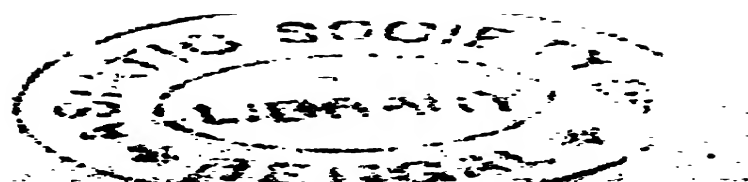
TEREBRATULA (TEREBRATELLA) COREANICA. *Ter. testā subelliptico-ovata, depressiusculā, laevigatā, medio plus minus flexuosa, fulvescente-albā, carneis sparsim radiatā, interdum radialim liratā, rostro tumido, breviusculo, subtilius utrinque depresso, foramine amplo, deltidio partito; valvā dorsali medio subdepressā, ventrali medio producta, lateribus subulatis; apophyse amplā, tenui, dupliciter affixā.*

THE COREAN TEREBRATELLA. Shell rather elliptically ovate, somewhat depressed, smooth, more or less flexuous in the middle, fulvous-white, sparingly rayed with bright crimson, sometimes radiately ridged, beak swollen, rather short, depressed beneath on each side, foramen large, deltidium divided; dorsal valve rather depressed in the middle, ventral valve produced in the middle, slightly winged at the sides; loop large, thin, doubly affixed.

ADAMS and REEVE, Moll. Voy. Samarang, p. 71. pl. 21. f. 3.

Hab. Corean Archipelago; Belcher.

A flexuously depressed species, sometimes almost winged at the sides, mostly smooth, of a delicate fulvous-white, more or less rayed towards the margin with pencils of deep crimson.





29.



30a.



30b.



31a.



31b.



32.



31d.



33a.



33b.



33c.

TEREBRATULA.

PLATE VIII.

Species 29. (Mus. Cuming.)

TEREBRATULA (BOUCHARDIA) CUMINGII. *Ter. testā subpyriformi-ovata, crassa, margine flexuosa, albidā, roseo tinctā, rostro acuminato-producto, parum incurvo, foramine parvo, integro, terminali, deltidio obsoleto, areā impresso-concavā, subrugosā; valvis aequaliter convexis, lateribus intus callosis; apophyse dupliciter affixā, septo amplo, anchorali, calloso.*

CUMING'S BOUCHARDIA. Shell somewhat pyriformly ovate, thick, flexuous at the margin, whitish, tinged with rose, beak acuminately produced, but little incurved, foramen small, entire, terminal, deltidium obsolete, area impressly concave, rather rough; valves equally convex, sides callous within; loop doubly attached, septum large, anchor-shaped, callous.

Terebratella? Cumingii, Davidson, *Proc. Zool. Soc.* 1852, p. 78. pl. 14. f. 10 to 16.

Magas Cumingii, Gray.

Hab. New Zealand.

An interesting form of *Terebratula*, in which the subgeneric characters of *Bouchardia* commence to be indicated. The beak is produced acuminately and scarcely incurved, the foramen being terminal, whilst the place of the deltidium is occupied by a rough impressly concave area, into which the dorsal valve hinges with a firm grip. The anchor-shaped septum and inner sides of the valves show the typical beginning of the callous structure, which is developed to a further extent in *Bouchardia fibula*, and in a more extreme manner in *Bouchardia tulipa*.

Species 30. (Fig. a, b, Mus. Brit.)

TEREBRATULA (BOUCHARDIA) FIBULA. *Ter. testā orbiculari-ovata, solidā, levigatā, albidā, roseo tinctā, rostro amplo, trigono-acuminato, erecto, foramine parvo, terminali, deltidio obsoleto, areā peramplā, planā; valvis subaequaliter convexis, lateribus intus callosis; apophyse dupliciter affixā, septo calloso-anchorali.*

THE BUTTON BOUCHARDIA. Shell orbicularly ovate, solid, smooth, whitish, tinged with rose, beak large, triangularly acuminate, erect, foramen small, terminal, deltidium obsolete, area very large, flat; valves nearly equally convex, sides callous within; loop doubly attached, septum callously anchor-shaped.

Hab. Bass's Straits, South Australia; Calvert.

This remarkable shell was lately purchased for the British Museum, of a dealer in the neighbourhood, Mr. Calvert, who reports that he dredged it in Bass's Straits, from a depth of 200 fathoms. This statement must, however, be received with caution. On mentioning it to Mr. Milligan, of Hobart Town, Secretary of the Royal Society of Tasmania, who happens to be at this moment in England, he assured me that Bass's Straits had been fully sounded by Captain Stokes, and that he did not find it deeper in any part than from 70 to 78 fathoms. The shell is curiously intermediate between *Bouchardia Cumingii* and *tulipa*. The beak is more flatly acuminately produced than in the former, while, like the latter, the sides about the region of the hinge, and the septum, appear, so far as I have been permitted to examine them, to be largely callous. The valves are so firmly hinged together that it would be impossible to separate them without considerable injury to the specimen. After soaking it in water, with the care and assistance of Dr. Baird, the valves opened to about the 16th of an inch, sufficient to allow of the callous structure of the interior being ascertained, but not sufficient to justify a drawing being made.

Species 31. (Fig. a, b, Mus. Cuming; Fig. c, Mus. Taylor.)

TEREBRATULA (MAGAS) VALENCIENNESII. *Ter. testā ovata vel flabelliformi, depressiusculā, radiatim costatā, costis subdistantibus, tripartitum fluctuatis, versus umbonem saepe evanidis, rivide aurantio-rubra, rostro tumido, planiusculo, foramine amplo, deltidio interdum partito; valvā dorsali planiusculā, ventrali medio tumidulā; apophyse reflexā, septo utrinque lamellato, subanchorali.*

VALENCIENNES' MAGAS. Shell ovate or fan-shaped, rather depressed, radiately ribbed, ribs somewhat distant, flowing in three fasciculi, often fading towards the umbo, bright orange-red, beak swollen, rather flat, foramen large, deltidium sometimes divided; dorsal valve rather flat, ventral valve a little swollen in the middle; loop reflected, septum lamellated on each side, slightly anchor-shaped.

Wallonia Valenciennesii, Davidson, *Ann. and Mag. Nat. Hist.*, 1850, pl. 15. f. 1.

Terebratella Boaninii, Davidson.

Magas Boaninii, Gray.

Hab. New Zealand.

A pretty ovate or fan-shaped semitransparent shell, tinged more or less with orange-red, in which the loop, commencing to be of a lamellar anchor-shape at its second place of attachment, partakes rather of the character of *Magas* than of *Terebratella*. Mr. Davidson generously yields to my suggestion that his *Waltonia Valenciennesii* and *Terebratula Evansii* are one and the same thing. The shell represented at Fig. 31 *b* is a specimen of unusually large size in the collection of Mr. Cuming, while that at Fig. 31 *c*, from Mr. Taylor's collection, is a specimen of the ordinary dimensions, attached to a dead valve of *Cardita*.

Species 32. (Mus. Cuming.)

TEREBRATULA (MAGAS) CRENULATA. *Ter. testâ orbiculari, fulvescente-albâ, corneâ, radiatim costatâ, costis subdistantibus, interstitiis liris tenuibus concentricis crenulatis, rostro brevi, tumido, subtilis utrinque concavo-depresso, foramine amplo, deltidio partito; valvis convexis, medio subproductis; apophyse dupliciter affixâ, septo utrinque lamellato, subanchorali.*

THE CRENULATED MAGAS. Shell orbicular, fulvous-white, horny, radiately ribbed, ribs rather distant, interstices crenulated with fine concentric ridges, beak short, swollen, concavely depressed on each side, foramen large, deltidium divided; valves convex, rather produced in the middle; apophysis doubly attached, septum lamellated on each side, somewhat anchor-shaped.

Terebratula crenulata, Sowerby, *Thesaurus Conch.* vol. i. p. 358. pl. 71. f. 96 to 98.

Terebratella crenulata, Davidson.

Magas crenulata, Gray.

Hab. Santa Cruz, Canaries; Cuming.

This species, of which only a single specimen is at present known, has somewhat the appearance of a *T. Labradorensis* or of a small *T. Magellanica*, but the valves are evenly convex and ribbed, *Pecten*-like, and the interstices between the ribs are crenulated with fine concentric ridges. And to these characters may be added the more important one of the apophysis being lamellated on each side like the flukes of an anchor, as in *Magas Valenciennesii*, and

which constitutes its subgeneric distinction from *Terebratella*. The habitat is certainly peculiar.

Species 33. (Fig. *a, b, c*, Mus. Cuming.)

TEREBRATULA (BOUCHARDIA) TULIPA. *Ter. testâ oblongo-ovalâ, subangustâ, depressâ, levigatâ, fulvescente-roseâ, carmineo-roseo tinctâ et sparsim radiatâ, rostro trigono-acuminato, foramine parvo, terminali, deltidio obsoleto, arcâ medio excavato-sulcatâ; valvâ dorsali plano-convexâ, ventrali versus rostrum conspicuè productâ; cardine valde calloso, plicis crassis longis interclausis composito; apophyse valde callosâ, rudi, anchorali.*

THE TULIP BOUCHARDIA. Shell oblong-ovate, rather narrow, depressed, smooth, fulvous-rose, stained and sparsely rayed with deep crimson-rose, beak triangularly acuminate, foramen small, terminal, deltidium obsolete, area excavately grooved in the middle; dorsal valve flatly convex, ventral conspicuously produced towards the beak; hinge very callous, composed of long thick interlocking plates; apophysis very callous, rude, anchor-shaped.

Terebratula tulipa, De Blainville, *Dict. Sci. Nat.* vol. liii. p. 144.

Bouchardia tulipa, Gray.

Terebratula rosea, Humphreys, *ined.*

Bouchardia rosea, Davidson.

Pachyrhynchus roseus, King.

Hab. Rio Janeiro, Brazil (dredged from a depth of thirteen fathoms); Macgillivray.

The *Terebratulæ Cumingii*, *fibula*, and *tulipa*, associated in subgenus *Bouchardia*, are distinguished from all other *Terebratulæ* by the structure of the shell's beak, which is acuminate, and has the foramen at its extremity. The deltidium plates are therefore dispensed with, and the lengthened area which occupies their place is either simply flat as in *B. fibula*, or excavately grooved as in *B. Cumingii* and *tulipa*. Along with this change in the structure of the beak there is a change in the interior of the shell. The apophysary skeleton, retaining the anchor form of *Magas*, solidifies and becomes almost rudimentary; and callosities commence to be formed about the hinge of *B. Cumingii* until they assume, in *B. tulipa*, the function of heavy interlocking plaits.



35 a



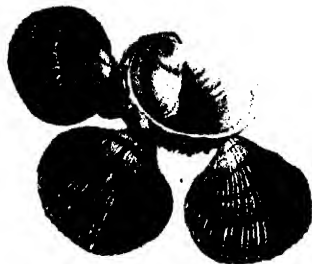
35 b



36 a



36 b



37 b



38 a



38 b



39 c

TEREBRATULA.

PLATE IX.

Species 34. (Mus. Taylor.)

TEREBRATULA (KRAUSSIA) LAMARCKIANA. *Ter. testâ latè orbiculari, flexuosâ, fulvescente-albâ, crassiusculâ, radiatim corrugato-liratâ, liris hic illic bifurcatis, striis concentricis, sub lente minutissimè crenulatis, rostro lato, abbreviato, foramine peramplo, deltidio latissimè partito; valvis ad marginem internam subincrassatis et spinulosis; apophyse bifurcatâ, septo versus marginem continuo.*

LAMARCK'S KRAUSSIA. Shell broadly orbicular, flexuous, fulvous-white, rather thick, radiately wrinkle-ridged, ridges here and there bifurcated, very minutely crenulated beneath the lines with concentric striae, beak broad, short, foramen very large, deltidium very widely divided; valves thickened and spinulose at the inner margin; apophysis bifurcated, septum continuous towards the margin.

Terebratella Lamarckiana, Davidson, Pro. Zool. Soc. 1852, p. 80. pl. 14. f. 22 and 23.

Kraussia Lamarckiana, Gray.

Hab. Sydney and New Zealand.

This is the little *Terebratula* affixed in small clusters, along with *T. (Waldheimia) flavescens*, to the stone represented in Plate I. It is of a broadly ovate pouch-like form, flexuous in growth, and rather strongly radiately wrinkle-ridged. It has the bifurcated apophysis of *Kraussia*, but the septum continues beyond the point of bifurcation nearly to the margin, which is in both valves neatly spinulose. A pale tinge of yellow is all that there is perceptible of colour in the species.

Species 35. (Fig. a, Mus. Cuming; Fig. b, Mus. Taylor.)

TEREBRATULA (KRAUSSIA) DESHAYESII. *Ter. testâ trigono-orbiculari, crassiusculâ, radiatim lirâtâ, flexuosâ, depressione centrali ad marginem subprominente, fulvescente, carmineo-roseo radiatâ, rostro latiusculo, abbreviato, foramine amplo, deltidio latissimè partito; apophyse bifurcatim lamellatâ.*

DESHAYES' KRAUSSIA. Shell triangularly orbicular, rather thick, radiately ridged, flexuous, the central depression being rather prominent at the margin, yellowish, rayed with crimson-rose, beak rather broad, short, foramen large, deltidium very widely divided; apophysis bifurcately lamellated.

Terebratula Capensis, Adams and Reeve (not *T. Capensis*, Gmelin), Moll. Voy. Samarang, p. 71. pl. 21. f. 4. *Kraussia Deshayesii*, Davidson.

Hab. Cape of Good Hope (dredged from a depth of a hundred and twenty fathoms); Belcher.

Very closely allied to the preceding species, but of a more triangular form, painted with deep crimson rays. The habitat Corea given by Mr. Davidson, on the authority of Mr. Cuming, is incorrect. *Kraussia Deshayesii* was dredged off the Cape of Good Hope in the same vessel in which *Terebratulina abyssicola* was collected at Corea, and the labels got confounded together. *Kraussia* is exclusively a type of the south temperate zone, as *Terebratulina* is of the north temperate.

Species 36. (Fig. a, Mus. Cuming; Fig. b, Mus. Taylor.)

TEREBRATULA (KRAUSSIA) PISUM. *Ter. testâ latè ovatâ, flexuosâ, depressione centrali plus minus sulcatâ, radiatim tenuilirâtâ, fulvescente-albâ, ferrugineo-roseo interdum pallidissimè tinctâ, rostro lato, abbreviato, foramine amplo, deltidio latissimè partito; apophyse conspicuè bifurcatim lamellatâ.*

THE PEA KRAUSSIA. Shell broadly ovate, flexuous, the central depression being more or less grooved, radiately finely ridged, yellowish-white, sometimes faintly tinged with rust-rose, beak broad, short, foramen large, deltidium very widely divided; apophysis conspicuously bifurcately lamellated.

Terebratula pisum, Valenciennes apud Lam. Anim. sans vert. vol. vii. p. 330.

Terebratula Natalensis, Krauss.

Kraussia pisum, Davidson.

Hab. South Africa.

This little species, which M. Valenciennes named the pea, and likened to a cherry-stone, resembles *Kraussia Lamarckiana*, but it is constantly distinguished by the fineness of the radiating ridges, while it is of larger size.

Species 37. (Fig. a, b, Mus. Taylor; Fig. c, Mus. Cuming.)

TEREBRATULA (KRAUSSIA) RUBRA. *Ter. testâ suborbiculari, radiatim costatâ, costis vividè rubris, rostro amplo, tumido, brevissimo, foramine peramplo, deltidio latissimè partito; valvis modicè convexis, dorsali medio*

depressiusculâ, ventrali medio productâ; apophyse conspicuâ bifurcatim laminatâ

THE RED KRAUSSIA. Shell nearly orbicular, radiately ribbed, ribs bright-red, beak large, swollen, very short, foramen very large, deltidium very widely divided; valves moderately convex, dorsal rather depressed in the middle, ventral produced in the middle; apophysis conspicuously bifurcately laminated.

Anomia rubra, Pallas, Misc. Zool. pl. 14. f. 2 to 11.

Anomia striata promontorii Bonæ Spei, Chemnitz.

Anomia Capensis, Gmelin.

Terebratula rubra, De Blainville.

Terebratula Capensis, Krauss.

Terebratula Algoensis, Sowerby.

Kraussia rubra, Davidson.

Hab. South Africa.

This very interesting species, though admirably figured, with its loopless bifurcating apophysis, nearly a century ago by Pallas, and again a few years later by Chemnitz, was not known to Valenciennes when preparing his monograph of the genus for Lamarck's 'Animaux sans vertèbres,' nor even to Sowerby, when publishing his monograph in Thesaurus. It is characterized by a remarkably short beak and large foramen, and the deltidium-plates are proportionably widely divided. The colouring, which is mainly on the radiating ribs, is bright coral-red. Fig. 37 *b* represents a curious example, in Mr. Taylor's collection, of three full-grown specimens attached to a *Crepidula*. Mr. Sowerby's *Terebratula Algoensis*, pronounced by Mr. Davidson to be a *Terebratella*, and by Dr. Gray to be a *Kraussia*, "scarcely differing from *K. pisum*," is a bleached fragmentary ventral valve of this species.

Species 38. (Fig. *a, b*, Mus. Cuming.)

TEREBRATULA (KRAUSSIA) COGNATA. *Ter. testâ sub-quadratâ, albidâ, obscure radiatim liratâ, rostro lato, tumido, abbreviato, medio subproducto, foramine per-ampto, deltidio latissime partito; valvâ dorsali planâ, versus marginem concavo-depressâ, margine intus acutè spinoso-dentato, ventrali convexâ, medio productâ; apophyse bifurcatim lamellatâ.*

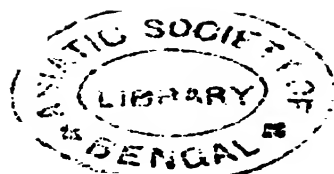
THE COGNATE KRAUSSIA. Shell somewhat square, whitish, obscurely radiately ridged, beak broad, swollen, rather produced in the middle, foramen very large, deltidium very widely divided; dorsal valve flat, concavely depressed towards the margin, margin internally sharply spinously toothed, ventral convex, produced in the middle; apophysis bifurcately lamellated.

Cognata Anomie craniolaris basi perforata, Chemnitz, Conch. Cab. vol. viii. p. 78. pl. 76. f. 688 *a, b*.

Kraussia cognata, Davidson.

Hab. South Africa.

Kraussia cognata, of which a single specimen in Mr. Cuming's collection, notwithstanding that the species was described and figured by Chemnitz, is the only one known to me, might easily be taken for a variety of *K. rubra*, but for one important character. The dorsal valve is conspicuously serrated within the margin by a row of erect spinous teeth. No mention is made of this character in the diagnosis of the British Museum Catalogue, but it is figured and carefully described by Chemnitz, "margine interiori subtilissimè et acutissimè denticulato."





539



536.



556



TEREBRATULA.

PLATE X.

Species 39. (del. Davidson and Woodward.)

TEREBRATULA (GWYNIA?) CAPSULA. *Ter. testâ minussimâ, subæquali, oblongo-ovatâ, pellucido-corneâ, umbonibus ambobus productis, rostrali paulo longiore, foramine parvo, deltidio partito, valvis convexiusculis, lateribus intus ad cardinem calloso-appendiculatis; apophyse . . . ?*

THE CAPSULE (GWYNIA?) Shell very minute, nearly equi-valve, oblong-ovate, transparent-horny, both umbones produced, the rostral a little the longer, foramen small, deltidium divided, valves rather convex, sides callously appendaged within at the hinge.

Terebratula capsula, Jeffreys, Ann. and Mag. Nat. Hist. 1859, pl. 2. f. 7 a, b.

Gwynia capsula, King.

Hab. Plymouth; Norman. Belfast Lough; Hyndman and Norman. Etretat, Normandy; Jeffreys.

Is this very minute form, it has been asked, an adult shell, or the fry of *Argiope cistellula*, or of some other *Terebratula*? An *Argiope* it certainly is not. The above superficial diagnosis embraces all the characters that appear to me to be strictly ascertained, and I am unable, after a most tedious examination of specimens, to add to them. The history of the subject is as follows:—

In the 'Annals and Magazine of Natural History' for August, 1858, Mr. Jeffreys announced that a very minute brachiopodous shell ($\frac{1}{8}$ th of an inch in length, and $\frac{1}{16}$ th in breadth) had been found by Mr. Norman, a well-known collector of British shells, resident in Durham, among some shell-sand received by him from Plymouth. "Being so excessively small," adds Mr. Jeffreys, "as to defy any attempt to examine the internal structure without injuring the specimen, it is impossible to say whether it is an *Argiope*; but having carefully compared it with *A. cistellula*, which varies greatly in form, I am inclined at present to consider it an extreme variety of that species." Attention being drawn to the subject, other specimens were dredged, by Mr. Hyndman, in Belfast Lough (reported, however, to be *Argiope cistellula*), and by Mr. Jeffreys himself, at Etretat, on the coast of Normandy. After an examination of specimens under a magnifying power of 100 diameters, Mr. Jeffreys came to the conclusion that the shell was not an *Argiope*, but a form more allied to *Terebratulina*. Is it then the fry of *T. caput-serpentis*? Mr. Jeffreys thought not, because the valves are nearly

equal, and have no indication of the radiating dichotomous ridges of that species. But what do we know of the Brachiopods in the fry state? Is it at all likely that they bear the detailed characteristics of the adult? He described it in the following year (Ann. and Mag. Nat. Hist., January, 1859) simply as a *Terebratula*, with the remark, "It may be a question whether it ought not to be placed in a new subgenus." Professor King, of Queen's College, Galway, upon seeing this announcement, lost no time in borrowing the specimens, and, in compliment to Mr. (J. Gwyn) Jeffreys, created the genus *Gwynia* for its reception (Proc. Dub. Univ. Zool. Assoc., April, 1859, p. 258). Professor King says, "The principal generic character of *Gwynia* is in the labial appendages being attached directly to the shell, and not to a loop." The grounds for this conclusion appear to me to be very insufficient. No loop, it is true, has been observed; but it is to be remarked that the shell much more resembles that of the free-looped *Terebratula* than that of the subgenera in which the labial appendages rest more directly on the shell. The most remarkable peculiarity of this shell as compared with ordinary adults, is the prominence of the dorsal umbo. The shell is almost double-beaked. Its internal structure is not yet understood. "Woodward and myself," writes Mr. Davidson to me in a letter just received, "wasted a whole day at the British Museum (the 27th of April, 1859) in endeavouring to find some kind of loop in *T. capsula*, but could find none, and thought it the fry of some other species."

Species 40. (Mus. Cuming.)

TEREBRATULA (MORRISIA) ANOMIOIDES. *Ter. testâ subquadrato-orbiculari, depressâ, tenui, pellucido-albâ aut virescente, ferrugineo-tinctâ, valvis subæqualibus, ventrali parum rostratâ, foramine amplo, rotundato, in valvis ambobus perforato, deltidio obsoleto vel nullo; apophyse brevi, calcariformi.*

THE ANOMIA-LIKE MORRISIA. Shell somewhat squarely orbicular, depressed, thin, transparent-white or greenish, rust-stained, valves nearly equal, ventral but little beaked, foramen large, rounded, perforated in both valves, deltidium obsolete or none; loop short, spur-shaped.

Orthia Anomioides, Scacchi; Philippi, Enum. Moll. Sicil. vol. ii. p. 69. pl. 18. f. 9.

Terebratula appressa, Forbes.

Morrissia Anomioides, Davidson.

Hab. Mediterranean (dredged from a depth of ninety-five fathoms); Forbes.

An interesting *Anomia*-like species, discovered about the same time, first by Professor Scacchi, and afterwards by Professor Edward Forbes, during his deep-sea dredgings in the Aegean. The ventral valve is very little beaked, so that the foramen, which is of large size, encroaches upon the dorsal valve, occupying the place of the umbo; and there is consequently no deltidium. The loop is short and spur-shaped, passing from a simple plate on each side to a central bifurcated process.

Species 41. (Mus. Cuming.)

TEREBRATULA (MORRISIA) LUNIFERA. *Ter. testâ trigono-orbiculari, tenuissimâ, hyalinâ, compressâ, ad marginem subindentatâ, valvâ ventrali paulo rostratâ, foramine amplo, deltidio nullo; apophyse septiformi, centrali.*

THE LUNAR MORRISIA. Shell triangularly orbicular, very thin, hyaline, compressed, slightly indented at the margin, ventral valve a little beaked, foramen large, no deltidium; apophysis septum-shaped, central.

Terebratula lunifera, Philippi, Enum. Moll. Sicil. vol. i. p. 97. pl. 6. f. 16 a to f.

Orthis lunifera, Philippi.

Morrissia lunifera, Gray.

Hab. Mediterranean; Philippi.

An extremely delicate hyaline shell, of rather a triangular form, puckered with indentations at the margin.

Species 42. (Mus. Cuming.)

TEREBRATULA (MORRISIA) DAVIDSONI. *Ter. testâ transversim ovalâ, depressâ, tenui, sordidè albâ aut fulvescente, lineis concentricis incrementi crebris, prominulis, rostro vis nullo, foramine amplo, in valvâ dorsali perforato, deltidio obsoleto, valvâ dorsali planâ, ventrali convexâ; apophyse brevi, calcariformi.*

DAVIDSON'S MORRISIA. Shell transversely ovate, depressed, thin, dead-white or fulvous, concentric lines of growth close-set, rather prominent, beak scarcely any, foramen large, perforated in the dorsal valve, deltidium obsolete, dorsal valve flat, ventral convex; apophysis short, spur-shaped.

DESLONGCHAMPS, Ann. and Mag. Nat. Hist. 1855, pl. x. f. 20 a to d.

Hab. Tunis (adhering to *Caryophyllia ramea*); Deslongchamps.

I do not see that the differences alleged to exist between this species and *M. Anomioides* are clearly specific. Far greater differences may be observed in bivalves of similar habits, of which specimens are more abundant; as of the common *Anomia ephippium*, for example, which it so closely resembles externally, though minute and of different organization. *M. Davidsoni* is distinguished from *M. Anomioides*, so far as the few specimens known permit of a distinction being noted, by the following particulars:—The shell is larger and of more transverse growth, with the concentric lines of increase rising almost to the sharpness of asperities. The foramen is large, and encroaches so much upon the dorsal valve as to appear almost to belong to it alone, and the dorsal valve is flat and irregularly indented, denoting a close attachment to the body to which the pedicle is affixed.

Species 43. (Fig. a, Mus. Taylor; Fig. b, Mus. Cuming.)

TEREBRATULA (ARGIOPE) DECOLLATA. *Ter. testâ semicirculari, cuneiformi, albâ, radiatim costatâ, costis paucis, obtusis, rostro subacutè trigonâ, brevi, areâ latâ, concavo-truncatâ, foramine amplo, deltidio viz nullo, valvis modicè convexis, ventrali verèq; rostrum tumidâ; apophyse ad cardinem utrinque lobatâ, septis tribus dentiformibus raaiantibus prope marginem anticam.*

THE DECOLLATED ARGIOPE. Shell semicircular, wedge-like, white, radiately ribbed, ribs few, obtuse, beak rather sharply triangular, short, area broad, concavely truncated, foramen large, deltidium rudimentary, valves moderately convex, ventral swollen towards the beak; apophysis lobed on each side at the hinge, with three radiating tooth-like septa near the front margin.

Anomia decollata, Chemnitz, Conch. Cab. vol. viii. p. 96. pl. 78. f. 705 a to d.

Anomia detruncata, Gmelin.

Terebratula decollata, Deshayes.

Terebratula detruncata, De Blainville.

Megathyris detruncata, D'Orbigny.

Terebratula aperta, De Blainville.

Terebratula dimidiata, Scacchi.

Terebratula cardita, Risso.

Terebratula urna-antiqua, Risso.

Orthis detruncata, Philippi.

Argiope detruncata, Deslongchamps.

Argiope decollata, Davidson.

Hab. Mediterranean (affixed to corals, at a depth of from fifty to a hundred fathoms).

Remarkable for its semicircular wedge-like form, arising from the beak of the ventral valve being thrown back by a broad concavely truncated area in which the foramen is conspicuously large. The apophysis is peculiar. It commences, as in most of the subgenera, with a lobe springing from on either side of the hinge, but, instead of being free, converging towards a central septum, it takes a sweep round the margin of the dorsal valve, contiguous with the shell, in connection with three prominent short radiating marginal tooth-like septa.

Species 44. (Mus. Cuming.)

TEREBRATULA (ARGIOPE) CUNEATA. *Ter. testâ subtri-gono-circulari, cuneiformi, albidâ aut rufescente, radiatim obsolete costatâ, inter costas vividè aurantiâ, rostro amplo, tumido, areâ parum truncatâ, foramine peramplo, deltidio viz nullo, valvis modicè convexis, ventrali ad rostrum conspicuè tumido-productâ; apophyse ad cardinem utrinque lobatâ, septo dentiformi unico prope marginem anticam.*

THE WEDGED ARGIOPE. Shell somewhat triangularly circular, wedge-shaped, whitish or reddish, radiately obsoletely ribbed, bright-orange between the ribs, beak large, swollen, area but little truncated, foramen very large, deltidium rudimentary, valves moderately convex, the ventral conspicuously tumidly produced at the beak; apophysis lobed on each side at the hinge, with a single tooth-like septum near the front margin.

Terebratula cuneata, Risso, Eur. Mérid. pl. 4. f. 179.

Anomia Pera, Mühlfeldt.

Orthis Pera, Philippi.

Terebratula Soldaniana, Risso.

Argiope cuneata, Davidson.

Hab. Mediterranean (at depths of from thirty to seventy fathoms). Canaries.

A narrower form than the preceding species, in which the lobed apophysis, sweeping round the dorsal valve, is supported near the margin with only one short tooth-like septum. The beak is more tumidly produced, and the hinge area, consequently, is less abruptly truncated.

Species 45. (Fig. a, b, Mus. Cuming.)

TEREBRATULA (ARGIOPE) NEAPOLITANA. *Ter. testâ tri-gono-orbiculari, versus marginem plicato-indentatâ, pel-*

lucido-albâ aut fuscescente, radiatim obsolete costatâ, rostro subtri-gono-producto, areâ modicè truncatâ, foramine amplo, deltidio utrinque emarginato, valvâ dorsali, planiusculâ, indentatâ, ventrali tumido-con-verâ; apophyse ad cardinem utrinque lobatâ, septo den-tiformi unico prope marginem, marginibus intus un-dique crassatis et denticulato-serratis.

THE NEAPOLITAN ARGIOPE. Shell triangularly orbicular, plicately indented towards the margin, transparent-white or brownish, radiately obsoletely ribbed, beak rather triangularly produced, area moderately truncated, foramen large, deltidium emarginated on either side, dorsal valve rather flat, indented, ventral, tumidly convex; apophysis lobed at the hinge on each side, with a single tooth-like septum near the front margin, margins thickened and denticulately serrated within throughout.

Terebratula Neapolitana, Scacchi, Oss. Zool. vol. ii. p. 18.

Terebratula seminulana, Philippi.

Orthis Neapolitana, Philippi.

Argiope Forbesii, Davidson.

Argiope Neapolitana, Davidson.

Hab. Mediterranean (at depths of from sixty to a hundred fathoms); Canaries.

This is of a more triangular form than the preceding species, and the valves are plicately indented towards the margin in a very characteristic manner, the ribs, which are scarcely discernible, being arranged in three fasciculi, or on three shields as it were. The apophysis is the same as in *Argiope cuneata*, but the margin of the valve is more thickened within, and between it and the loop there is a distinct row of spinous teeth.

Species 46. (Mus. Cuming.)

TEREBRATULA (ARGIOPE) CISTELLULA. *Ter. testâ trans-versim ovatâ vel subquadratâ, anticè subindentatâ, sub lente minutissimè granulosa, fulvâ, interdum fuscescente, rostro brevi, areâ truncatâ, foramine peramplo, del-tidio viz nullo, valvis subæqualiter convexis, ventrali tumidiore; apophyse ad cardinem utrinque lobatâ, septo dentiformi unico prope marginem anticam.*

THE LITTLE CASKET ARGIOPE. Shell transversely ovate, or somewhat square, a little indented in front, beneath the lens very minutely granuled, fulvous or brownish, beak short, area truncated, foramen very large, deltidium rudimentary, valves nearly equal, ventral the more swollen; apophysis lobed at the

TEREBRATULA.—PLATE X.

hinge on both sides, with a single tooth-like septum near the front margin.

Terebratula cistellula, Searles Wood, Ann. and Mag. Nat. Hist. vol. vi. p. 253 (fossil).

Megathyris cistellula, Forbes and Hanley.

Argiope cistellula, Davidson.

Hab. Skye; Barlee, Mac Andrew. Zetland, Exmouth; Barlee. Belfast Bay; Hyndman. Guernsey; Lukis. Etretat, Normandy; Jeffreys. Mediterranean; Suess.

This interesting little *Argiope*, originally described from

a fossil specimen by Mr. Searles Wood, has become well established in the British Fauna through the discovery of living specimens by Mr. Barlee, Mr. Mac Andrew, Mr. Lukis, Mr. Hyndman, and Mr. Jeffreys, and it is now reported by Suess from the Mediterranean. It has not the triangular plicately indented form of *Argiope Neapolitana*, nor the semicircular swollen-beaked outline of *A. cuneata*, from both of which species it also differs in being uniformly smaller. I have not seen any specimen so square in form as that figured by Forbes and Hanley.





47a.



47b



47c.



48a.



48c.



48d



26.



TEREBRATULA.

PLATE XI.

Species 47. (Fig. a, Mus. Taylor; Fig. b, c, Mus. Cuming.)

TEREBRATULA (MEGERLIA) TRUNCATA. *Ter. testâ transversim ovalâ, plus minus semicirculari, fulvescente-albâ, ferrugineo-tinctâ, liris dichotomis undique confertim radiatâ, rostro brevissimè truncato, foramine peramplo, areâ angustâ, quasi sulcatâ, deltidio viz nullo; valvis subæqualibus, modicè convexis, dorsali medio latè indentatâ, ventrali tumidiusculâ; apophyse brevi, dupliciter affixâ, septo centrali bilobato, marginibus intus spinulosus.*

THE TRUNCATED MEGERLIA. Shell transversely ovate, more or less semicircular, fulvous-white, stained with rust, closely rayed throughout with dichotomous ridges, beak very shortly truncated, foramen very large, area narrow, as though grooved, deltidium rudimentary; valves nearly equal, moderately convex, the dorsal broadly indented in the middle, ventral moderately swollen; apophysis short, doubly attached, central septum bilobed.

Anomia truncata, Linnæus, Syst. Nat. p. 1152.

Anomia disculus, Pallas.

Terebratula truncata, Lamarek.

Terebratula disculus, De Blainville.

Terebratella truncata, D'Orbigny.

Terebratula monstrosa, Scacchi.

Orthis truncata, Philippi. •

Megerlia truncata, King.

Orthis oblita, Michelotti.

Megathiris oblita, D'Orbigny.

Hab. Mediterranean (affixed to corals, at a depth of from fifty to a hundred fathoms). Cape Finisterre (at a depth of ninety fathoms). Canaries.

The beak of this species is so shortly truncated, that the foramen of the shell is always more or less eroded, encroaching upon the umbo of the dorsal valve. Though comparatively unique in form, the apophysis does not very greatly differ from that of *Terebratella*. It is a shortly reflected loop, broadly doubly attached to a central septum, but the loop between the two points of attachment has an additional process or lobe on each side. Mr. Jeffreys states that he possesses a specimen collected by Dr. Turton in Torbay, but its British habitat has not been confirmed by subsequent researches.

Species 48. (Fig. a, b, Mus. Taylor; Fig. c, d, Mus. Cuming.)

TEREBRATULA (THECIDEA) MEDITERRANEA. *Ter. testâ subpyriformi-ovalâ, crassâ, irregulari, sordidè albâ aut*

fulvescente, rostro calloso, validè producto, trigono, imperforato, areâ deltidioque peramplis, cardine utrinque calloso-dentato, valvâ dorsali concavo-planâ, ventrali crassè convexâ, radiatim striato-sulcatâ, margine intus serrato; apophyse calloso-affixâ, quadrilobatiâ.

THE MEDITERRANEAN THECIDEA. Shell somewhat pyriformly ovate, thick, irregular, dead-white or fulvous, beak callous, very much produced, triangular, imperforate, area and deltidium very large, hinge callously toothed on each side, dorsal valve concavely flattened, ventral thickly convex, radiately striately grooved, margin serrated within, apophysis callously allixed, four-lobed.

Risso, Eur. Mérid. pl. iv. f. 183.

Thecidea testudinaria, Michelotti.

Thecidea spondylea, Scacchi.

Hab. Mediterranean (attached to corals).

Thecidea is rather a difficult subject to observe, by reason of its habits. It bears much the same relation to the rest of the *Terebratulae* that *Hinnites* bears to *Pecten*. The pedicle, like the byssus in that genus, loses its function, and the animal affixes itself by the shell. The shell, as in most such cases, is of extremely callous and irregular growth, and it is only by the casual development of its structural details in a numerous series of specimens, that its characters can be ascertained. In some fossil forms of *Thecidea* a minute terminal foramen has been shown to exist, but I find no trace of one in the recent species. The umbo of the ventral valve is largely produced into a thickened spondyloid beak, and in the front area of it, a large triangular rudimentary deltidium is soldered. The dorsal valve, rudely indented and flattened, is of a horse-shoe shape, and the ventral valve, densely convex, is rayed outwardly with close-set grooves, which produce serrations on the inner margin. The hinge is composed of distinct tooth-like processes in the ventral valve, interlocking with corresponding sockets in the dorsal; and the apophysary system is modified into a kind of fixed ridge, accompanied by a profusion of little indentations. When describing *Thecidea* twenty years ago in my 'Conch. Systematica' (vol. i. p. 184), I remarked that "the upper valve is flat and curiously indented, as if to fit certain corresponding parts in the body of the animal. These indentations, which spread round in a semicircular direction from the hinge, look exactly as if they were picked out in wax; and in a specimen we have examined with considerable minuteness, they were filled with the dried remains of numerous fine cilia." No sort of loop had been observed in *Thecidea*, and it is now obvious that this bed of the ciliary arms is a modification of it.

TEREBRATULA.

	Plate.	Species.		Plate.	Species.
<i>abyssicola</i> , Adams and Reeve . .	IV.	14	<i>Japonica</i> , Sowerby	IV.	16
<i>Algoensis</i> , Sowerby	IX.	37	<i>Labradorensis</i> , Sowerby	V.	19
<i>Anomioides (Orthis)</i> , Scacchi . .	X.	40	<i>Lamareckiana (Kraussia)</i> , Dav. . .	IX.	34
<i>angusta</i> , Adams and Reeve . . .	IV.	16	<i>lenticularis</i> , Deshayes	II.	4
<i>aperta</i> , De Blainv.	X.	43	<i>lunifera (Orthis)</i> , Philippi	X.	41
<i>appressa</i> , Forbes	X.	40	<i>Magellanica (Anomia)</i> , Chemn. .	V.	21
<i>aurita</i> , Fleming	IV.	15	<i>Mediterranea</i> , Risso	XI.	48
<i>australis</i> , Quoy	II.	1	<i>minor</i> , Suess	III.	8
<i>Bouchardii (Terebratella)</i> , Dav. .	V.	17	<i>monstrosa</i> , Scacchi	XI.	47
<i>Californica</i> , Koch	II.	3	<i>Natalensis</i> , Krauss	IX.	36
<i>cancellata</i> , Koch	IV.	13	<i>Neapolitana</i> , Scacchi	X.	45
<i>Capensis (Anomia)</i> , Gmel. . . .	IX.	37	<i>oblita (Orthis)</i> , Michelotti	XI.	47
<i>Capensis</i> , Adams and Reeve . . .	IX.	35	<i>Pera (Anomia)</i> , Mühlfeldt	X.	44
<i>capsula</i> , Jeffreys	X.	39	<i>physema (Waldheimia)</i> , Val. . .	VI.	23
<i>caput-serpentis (Anomia)</i> , Linn. .	IV.	15	<i>picta (Anomia)</i> , Chemnitz	III.	9
<i>cardita</i> , Risso	X.	43	<i>pisum</i> , Val. apud Lam.	IX.	36
<i>Chilensis</i> , Broderip	V.	21	<i>pubescens</i> , Müller.	IV.	15
<i>cistellula</i> , Searles Wood	X.	46	<i>pulchella</i> , Sowerby	VII.	25
<i>cognata (Anomia)</i> , Chemn. . . .	IX.	38	<i>radiata (Terebratulina)</i> , Reeve . .	III.	7
<i>Coreanica</i> , Adams and Reeve . .	VII.	28	<i>recurva</i> , Quoy	II.	1
<i>cornea</i> , D'Orbigny	IV.	15	<i>retusa (Anomia)</i> , Linn.	IV.	15
<i>costata</i> , Lowe	IV.	15	<i>rosea (Bouchardia)</i> , Dav.	VIII.	33
<i>cranium</i> , Müller	III.	6	<i>rubella</i> , Sowerby	VII.	26
<i>crenulata</i> , Sowerby	VIII.	32	<i>rubicunda</i> , Solander	VII.	27
<i>cruenta</i> , Dillwyn	V.	20	<i>rubra (Anomia)</i> , Pallas	IX.	37
<i>Cumingii (Terebratella ?)</i> , Dav. .	VIII.	29	<i>rubra</i> , Sowerby	V.	20
<i>Cumingii (Terebratulina)</i> , Dav. .	IV.	12	<i>sanguinea (Anomia)</i> , Chemn. . .	VII.	25
<i>cuneata</i> , Risso	X.	44	<i>sanguinea</i> , Leach	V.	20
<i>Davidsoni (Morrisia)</i> , Desl. . . .	X.	42	<i>seminulum</i> , Philippi	X.	45
<i>decollata (Anomia)</i> , Chemn. . . .	X.	43	<i>septentrionalis</i> , Courthouy	IV.	15
<i>dentata</i> , Val. apud Lam.	II.	1	<i>septigera</i> , Loeven	III.	10
<i>Deshayesii (Kraussia)</i> , Dav. . .	IX.	35	<i>Soldaniana</i> , Risso	X.	44
<i>detruncata (Anomia)</i> , Gmelin . .	X.	43	<i>Sowerbyi</i> , King	V.	21
<i>dilatata</i> , Val. apud Lam.	II.	2	<i>spatula (Delthyris)</i> , Menke	IV.	15
<i>dimidiata</i> , Scacchi	X.	43	<i>Spitzbergensis (Terebratella)</i> , Dav. .	VII.	24
<i>disculus (Anomia)</i> , Pallas	XI.	47	<i>spondylea (Thecidea)</i> , Scacchi . .	XI.	48
<i>dorsata</i> , Val. apud Lam.	V.	21	<i>striata</i> , Leach	IV.	15
<i>erythroleuca</i> , Quoy	III.	9	<i>suffusa (Terebratella)</i> , Reeve . .	V.	18
<i>euthyra</i> , Philippi	III.	8	<i>testudinaria (Thecidea)</i> , Mich. . .	XI.	48
<i>Evansii (Terebratella)</i> , Dav. . .	VIII.	31	<i>transversa</i> , Sowerby	V.	22
<i>fibula (Bouchardia)</i> , Reeve . . .	VIII.	30	<i>truncata (Anomia)</i> , Linn.	XI.	47
<i>flavescens</i> , Val. apud Lam. . . .	II.	1	<i>tulipa</i> , De Blainv.	VIII.	33
<i>flexuosa</i> , King	V.	21	<i>unguis</i> , Küster	VIII.	33
<i>Forbesii (Argiope)</i> , Dav.	X.	45	<i>urna-antiqua</i> , Risso	X.	43
<i>Gaudichaudi</i> , De Blainv.	II.	2	<i>uva</i> , Broderip	III.	11
<i>globosa</i> , Val. apud Lam.	II.	3	<i>Valenciennesii (Wallonia)</i> , Dav. .	VIII.	31
<i>Grayi</i> , Davidson	II.	5	<i>vitrea (Anomia)</i> , Born	III.	8
<i>inconspicua</i> , Sowerby	VII.	27	<i>Zelandica</i> , Deshayes	V.	20

CORRIGENDA.

- Sp. 6. *T. (Waldheimia) cranium*.—Add as synonym *Macandrevia cranium*, King.
- Sp. 8. *T. vitrea*.—For synonym *T. enthyra*, read *T. euthyra*; and add synonym *T. minor*, Succs.
- Sp. 9. *T. (Waldheimia) picta*.—Add to habitat Tongataboo, Friendly Islands; Quoy.
- Sp. 11. *T. nva*.—Add to habitat Falkland Islands; Mus. Cuming.
- Sp. 14. *T. (Terebratulina) abyssicola*.—For *Hab.* Cape of Good Hope, read *Hab.* Corea.
- Sp. 25. *T. (Terebratella) sanguinea*.—For “The apophysis may be said to be intermediate between *Terebratella* and *Terebratula* proper, rather than *Megerlia*,” read “The apophysis may be said to be intermediate between *Terebratella* and *Mergerlia*, partaking considerably of the latter.”
- Sp. 33. *T. (Bouchardia) tulipa*.—Add as synonym *T. unguis*, Küster.

MONOGRAPH
OF THE GENUS
C R A N I A.

' Your face, my Thane, is as a book
Where men may see strange matters.' *Shakspeare*





1.



2.



3.



CRANIA.

PLATE I.

Genus CRANIA, Retzius.

Testa inaequalvalvis, æquilateralis, orbicularis, posticè sub-truncato-quadrata, interdum lævigata, interdum rugosa, valvâ inferiore adherente, incrassatâ, intus variè cicatricosâ, rostellum centrale, superiore convexâ, interdum depressâ, vertice subcentrali. Ligamentum aut cardo nullum.

Shell inequivalve, equilateral, orbicular, posteriorly somewhat truncately squared, sometimes smooth, sometimes roughened, lower valve adhering, thickened, internally variously scarred, with a central rostellum, upper valve convex, sometimes depressed, vertex nearly central. No ligament or hinge.

The shell of this Brachiopod was first known in a fossil state. The calcifying functions of the animal are exercised chiefly by the under lobe of the mantle for the secretion of a thickened adherent valve, unconnected by any hinge or ligament with the upper valve; and before the time of Linnæus it was named *Nummus*, and sometimes *Nummulus*, *Brattenburgensis*, "Brattenburgh Money." Linnæus and Chemnitz still confounded recent and fossil specimens together; and the separation of the valves led naturalists, among whom were Müller and our own Montagu, to describe them as Limpets. A curious character in the adherent valve of this genus, and which seems to have attracted the attention of Linnæus, is a similitude, in the configuration of the internal muscular scars and protuberances, of a human face. A little above the centre a raised callosity, termed the rostellum, forms the nose, and the scars of the two posterior adductor muscles of the animal give the resemblance of a pair of eyes, while the anterior thickened rim serves for the outline of the cheeks and chin. This fanciful representation suggested to Linnæus the name *Anomia craniolaris*; and *Crania* was soon proposed by Retzius to separately distinguish the group.

M. DeFrance described several fossil species of *Crania*. The first special monograph of the genus, which included the recent species, was made in 1828 by M. Hanninghaus, of Crefeld. Since that period the *Crania* have been ably studied by Sowerby, Deshayes, Davidson, and Suess, and although little has been added to our knowledge of the species, some interesting particulars have been collected of their geographical and bathymetrical distribution and its bearings on geological phenomena. Only four recent species have been collected. *C. anomala*, of our own coast,

the best-known species of the genus, ranges from Spitzbergen, in the north of Europe, to Vigo Bay, in the south; but here it stops. Professor Suess has observed that *C. anomala* ranges over this area closely, both in locality and depth, with *Terebratulina caput-serpentis*. Wherever one genus is found between Spitzbergen and Vigo the other is found also; but the *C. anomala* does not pass with the *T. caput-serpentis* into the Mediterranean nor to North America; and he deduces some interesting conclusions from this fact in connection with their fossil distribution to show the relations of their existence in time as well as in space. Another species, *C. turbinata*, appears in the Mediterranean, and it was dredged in the Ægean by Professor Forbes, from depths varying between forty and a hundred and fifty fathoms. A third species, *C. rostrata*, is recorded from West Africa; and a species, which I have had the pleasure of naming *C. Suessii*, was collected by Mr. Strange in Australia. No *Crania* has, as yet, been collected in the New World. *C. radiosa*, described by Dr. Gould from a shell received from Rio Janeiro proves to be an *Orbicula* (*Discina*, nonnul.), which genus is not uncommon in the waters of South and Central America.

In *Terebratula* and *Rynchonella* the natural position of the mollusk is to repose upon its back; the lower valve of the shell is the dorsal valve, and the upper or ventral valve, from which anchorage is obtained, projects over one side, like a beak, for lowering the anchor. In *Crania* the position of the mollusk is reversed, the ventral valve is undermost; and, having no need, or even space, for a tendinous anchor, the valve becomes agglutinated at once to the place of attachment. But it will be observed, that in the genus *Orbicula* the shell is not so closely adherent, and there is a tendinous muscle of attachment passing through a fissure in a disk of the under valve; and it is conjectured that the same thing obtains in a rudimentary form in *Crania* in an early stage of its development. The arms, or brachial appendages, of *Crania* have no internal apophysary skeleton for their support; they are folded into a pair of spiral coils, which are directed towards the concavity of the upper valve, a limpet-like plate, and they are supported in the concavity of the upper valve by a central prominence rising up between them from the lower. This central prominence is termed the rostellum. The under valve of *Crania*, as with other adherent shells, varies much in thickness according to the nature of its place of attachment.

Species 1. (Mus. Cuming.)

CRANIA TURBINATA. *Cran. testā valvā inferiore subquadrato-orbiculari, posticē truncatā, impressionibus posticis transversis, anterioribus in unam transversalem confluentibus, rostellō parvo, disco pedato, limbo antico incrassato; valvā superiore subtrapezoidali, convexā, cicatricibus posterioribus magnis, limbo interno incrassato, elevato, margine tenui; extus lævi, brunneā.*

THE TURBINATED CRANIA. Shell with the lower valve somewhat squarely orbicular, posteriorly truncated, posterior impressions transverse, anterior flowing into one transverse impression, beak small, disk pedate, anterior rim thickened; upper valve convex, subtrapezoid, posterior scars large, inner rim thickened, raised, thin at the edge; outer surface smooth, brown.

Anomia turbinata, Poli, Test. Sicil. vol. ii. p. 189. pl. 30.

Crania ringens, Hæninghaus.

Hab. Mediterranean and Aegean Seas (attached to stones and coral at a depth of from forty to a hundred and fifty fathoms); Forbes.

Crania turbinata is a smaller and more conical species than *C. anomala*, and the internal rostellum is much less prominently developed. It is the only species inhabiting the Mediterranean. In the Aegean Sea, Professor Forbes collected living specimens at depths varying between forty and ninety fathoms; and dead specimens were brought up with the dredge from the depth of a hundred and fifty fathoms. Poli's Mediterranean *Anomia turbinata* has been quoted hitherto as a synonym of *C. anomala*. The researches of recent naturalists on the geographical distribution of the Northern species show that *C. anomala* does not extend further south than Vigo Bay.

Our figure represents a stone with a group of *Terebratulina* (Meyerlin) *truncata* attached to it on each side, with a single *C. turbinata* of a darker red than the rest, showing external surface of upper valve, to the right of the left-hand group; and to the left of the right-hand group is an under valve of the *Crania*, showing the small central rostellum and surrounding impression.

Species 2. (Mus. Cuming.)

CRANIA SUENSII. *Cran. testā suborbiculari, posticē interdum truncato-quadratā, cicatricibus posticis ovatis, obliquis, rostellō amplo, calloso, limbo antico incrassato, granato; valvā superiore solidiusculo, rugoso, aurantio-rufo pallidē tinctā, cicatricibus internis posticis angustē ovatis, callosis elevatis, obliquē confluentibus.*

SUENS'S CRANIA. Shell suborbicular, sometimes truncately squared on the posterior side, posterior scars ovate,

oblique, rostellum large, callous, anterior rim thickened, granulated; upper valve rather solid, rough, faintly tinged with orange-red, internal posterior scars narrowly ovate, obliquely flowing together.

Hab. Sydney; Strange.

Of this interesting Australian *Crania* Mr. Cuming possesses five specimens, collected by Mr. Strange at Sydney. It comes very near to the West African species which has been assigned to *C. rostrata* of Hæninghaus, but it is of a more convex and roughly solid growth; and the difference of habitat leaves no room for doubt on the subject. The internal posterior scars of the lower valve are obliquely ovate and somewhat isolated, while in the upper valve they are narrow and callously raised. The rostellum is large and prominent. Another character is a delicate tinge of orange-red on the outer surface, quite different to the red-stained colouring of the European species.

The name of Professor Suess being especially entitled to a place in the nomenclature of the Brachiopods, I dedicate this species to him in testimony of my high sense of the originality and value of his researches.

Species 3. (Mus. Cuming.)

CRANIA ROSTRATA. *Cran. testā valvā inferiore rotundato-subtrapezoidali, margine postico rectiusculo, cicatricibus posticis orbicularibus, anticis parvis, semilunaribus, anticē coalescentibus, rostellō parvo, acutiusculo, disco sinuato, limbo granifero, anticē irregulari, incrassato; valvā superiore tenuiore, albā, subradiatim rugosā, intus costellis duabus elevatis, radiantibus, ex centro versus marginem posticum decurrentibus.*

THE BEAKED CRANIA. Shell with the lower valve rotundately subtrapezoidal, posterior margin rather straight, posterior scars orbicular, the anterior small, semilunar, anteriorly coalescing, rostellum small, rather sharp, disk sinuated, rim grained, anteriorly irregular, thickened; upper valve thinner, white, somewhat radiately roughened, interior with two raised ribs, radiating, running from the centre towards the posterior margin.

HÆNINGHAUS, Monog. p. 3, f. 3 a, b.

Hab. West Africa.

No fresh observations have been made on this species since the publication of Mr. Sowerby's monograph of the genus in 1846, and I give his characters *verbatim*. Its habitat, Mr. Cuming informs me, is not the Mediterranean, as given by Sowerby, but West Africa.

Species 4. (Mus. Cuming.)

CRANIA ANOMALA. *Cran. testā valvā inferiore subquadrato-orbiculari, posticē subtruncatā, cicatricibus posticis magnis, ovalis, in centrum fere coalescentibus, rostello obtuso, disco palmato-radiato, limbo antico incrassato, granulato; valvā superiore tenuiculā, nunc lævigatā, nunc angulosā, rufescente-brunneo tinctā, vertice subacutē uncinato, cicatricibus posticis magnis.*

THE ANOMALOUS CRANIA. Shell with the lower valve somewhat squarely orbicular, posteriorly slightly truncated, posterior scars large, ovate, almost coalescing in the centre, rostellum obtuse, disk palmately radiate, anterior rim thickened, granulated; upper valve rather thin, sometimes smooth, sometimes rather rough, stained with reddish-brown, vertex rather sharply hooked, posterior scars large.

Patella anomala, Müller, Zool. Dan. vol. 1. p. 14. pl. 5. f. 1 to 7.

Anomia craniolaris, pars, Linnaeus.

Patella distorta, Montagu.

Patella Kermes, Humphrey.

Orbicula Norvegica, Lamarck.

Crania personata, Lamarck.

Crania Norvegica, Sowerby.

Criopus anomalus, Fleming.

Crania anomala, Lovén.

Hab. North Atlantic, from Spitzbergen to Vigo Bay.

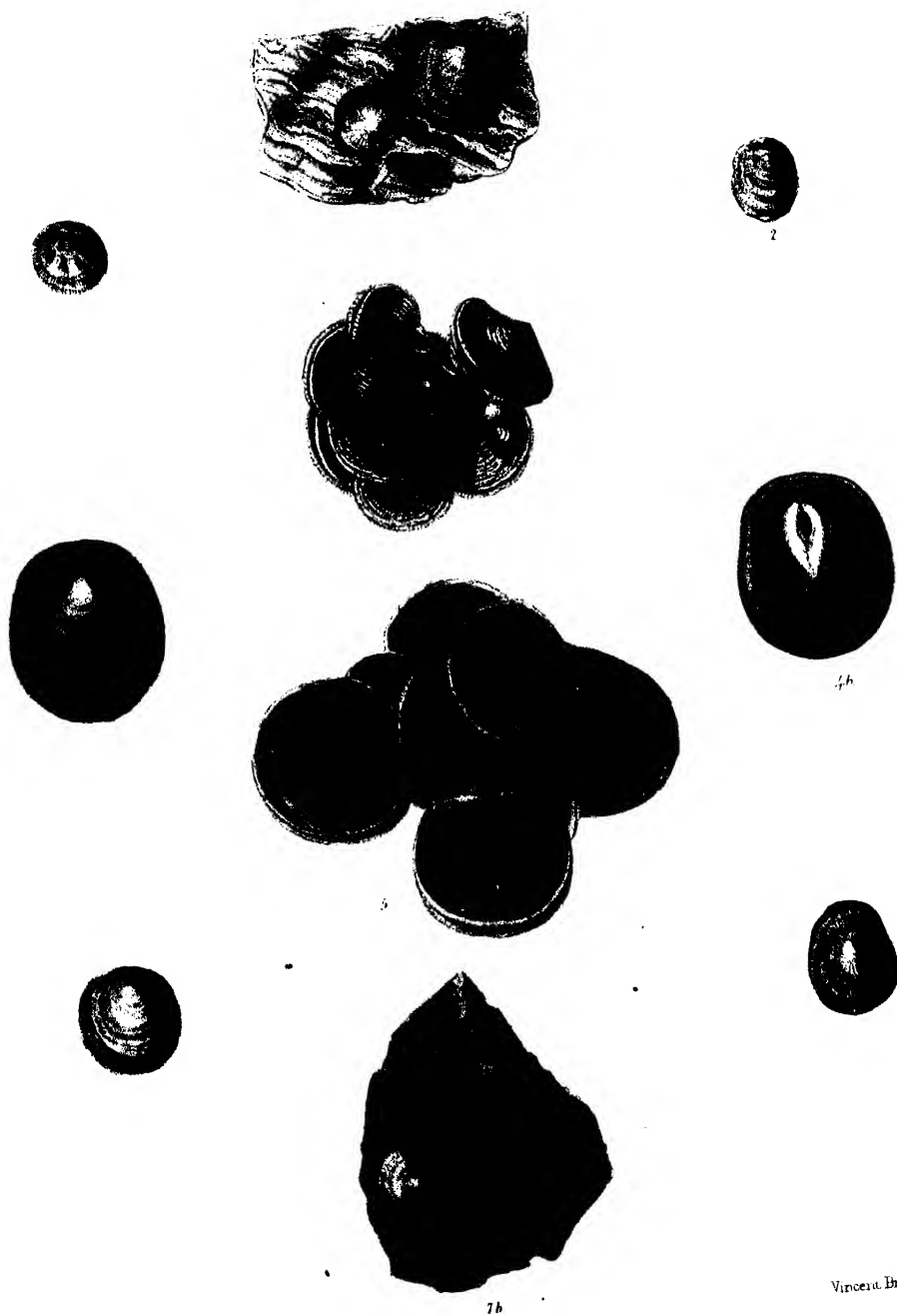
The typical form of this species is orbicular, slightly truncate squared on the posterior side, with the vertex produced into a small and rather sharp hook a little posterior to central. On the stone represented in our plate, there are twelve specimens attached. The lowest, resting by itself on a flat surface, undisturbed in growth by any surrounding obstacles, is of the symmetrical typical form just described; on the left, as the specimens approximate and encumber one another, they become distorted; on the edge of the stone to the extreme left, the shell, from its declivitous position, acquires an abrupt convexity.

Professor Suess has observed that *Crania anomala* ranges along the Atlantic seaboard, between Spitzbergen and Vigo Bay, in company always with *Terebratula* (*Terebratulina*) *caput-serpentis*, but does not extend its range with that species to North America or the Mediterranean.

MONOGRAPH
OF THE GENUS
O R B I C U L A.

‘Tempests are calm to thee ; they know thy hand,
And hold it fast, as children do their father’s.’—*George Herbert*





ORBICULA

PLATE I.

Genus ORBICULA, Sowerby.

Testa suborbicularis, inequivalvis, valvâ superiore nunc conoidâ nunc depressâ, testaceâ vel corneâ, interdum lœvigatâ, sæpe radiatim striatâ, posticè tumidâ, vertice subcentrali, posticè inclinotâ; valvâ inferiore tenui, corneâ, vel concentricè vel radiatim striatâ, disco postico, subquadrato-cordato, pediculo adhesionis fissurata. Cardo aut ligamentum nullum.

Shell somewhat orbicular, inequivalve, upper valve sometimes conoid, sometimes depressed, testaceous or horny, sometimes smooth, often radiately striated, posteriorly swollen, vertex subcentral, inclined posteriorly; lower valve thin, horny, either concentrically or radiately striated, with a posterior disk slit for the passage of the pedicle of adhesion. No hinge or ligament.

A genus with the name *Orbicula* was founded by Lamarek for the reception of a Northern brachiopod, *Patella anomala*, Müller, which proved to be *Anomia craniolaris*, pars, Linnæus, and the type of Retzius's genus *Crania*. A Mediterranean *Crania* (*Anomia turbinata*, Poli.) was considered synonymous with it, but it has been shown to be distinct. On meeting with the first-discovered specimen of the group before us, Lamarek created a genus *Discina*, while Mr. Sowerby confounded it with the Northern *Crania*, of which Lamarek had made an *Orbicula*. Deshayes, Broderip, and Sowerby, out of all this confusion, adopted *Orbicula* for the brachiopods under consideration, and it appears to me to be unnecessary to set aside their decision.

The shell of *Orbicula* differs from that of *Crania* in the very important particular of having the under valve thin and horny, furnished with a disk in which is a slit for the passage of a pedicle of attachment. The disk is subcentral, more or less inclined to posterior, and corresponds in position with the vertex of the upper valve. In some species the vertex is posterior, and the disk is also posterior; in others the vertex is a little posterior to central, and the disk is also a little posterior to central. That is the natural symmetrical growth of the shell on a plane surface. But if the animal adheres to a declivitous surface, the disk and vertex, which on a plane surface would be subcentral, press more posteriorly; and if the surface be hollow, then the under valve is more concave, and the vertex and disk more central.

Seven species of *Orbicula* are now known. We have none in the European seas. The original species, found in ballast, *O. ostreoides*, is supposed to be a native of North or West Africa, and there is a small species, *O. stella*, in the Eastern Seas. The rest are inhabitants of the New World, where *Crania* is unknown. *O. Antillarum* is the analogue of *O. stella* in the West Indies, and *O. Cumingii*, an allied form of more solid growth, ranges from Peru to Panama, Guatemala, and Mazatlan. But the most striking type is that represented by three species on the coast of Peru, *P. lamellosa*, *lœvis*, and *tenuis*, of the last of which Mr. Cuming possesses specimens, strange to say, from South Australia.

Species 1. (Fig. 1 a, b, Mus. Cuming.)

ORBICULA STELLA. *Orb. testâ orbiculari, concentriculâ, subtilissimè radiatim striatâ, striis minutè concentricè clathratis, vertice subcentrali, lœvigatâ, interdum carneo tinctâ et radiatâ.*

THE STAR ORBICULA. Shell orbicular, rather convex, very finely radiately striated, striae minutely concentrically latticed, vertex nearly central, smooth, sometimes tinged and rayed with flesh-colour.

Discina stella, Gould, Exped. Shells, Pro. Bost. Soc. 1846. Otia Conch. p. 120.

Hab. China Sea, Wilkes; Singapore and Philippine Islands, Cuming.

This species has a wide distribution in the Eastern Seas. On comparing authentic specimens received from Dr. Gould, one of which is given at Fig. 1 b, collected in the China Sea by Wilkes' Exploring Expedition, I find them identical with specimens collected by Mr. Cuming, attached to fragments of *Pallaster*, *Pinna*, and *Malleus*, at Singapore and at the Philippine Islands. The sculpture varies in strength; in young specimens, as stated by Dr. Gould, the radiating striae are scarcely developed; in older specimens, and especially specimens that have had to contend with irregularities in their place of attachment, the sculpture has a minutely latticed character, like the grain of a thimble. The under valve is thinly membranaceous or thicker, concave or convex, according to circumstances of habitation; and the position of the slit obviously varies with the position of the vertex in the opposite valve. On a flat place of attachment the shell is symmetrically orbi-

cular, and the vertex and subincumbent slit are nearly central; but when attached to a sloping or declivitous substance, the vertex is pressed to one side, and the slit of the under valve follows the same direction.

Species 2. (Mus. Cuning.)

ORBICULA ANTILLARUM. *Orb. testâ ovato-orbiculari, depresso-conveâ, subtiliter radiatim striatâ, striis irregularibus, subcorrugatis, viz clathratis, vertice subposteriori.*

THE WEST INDIA ORBICULA. Shell ovately orbicular, depressly convex, finely radiately striated, striae irregular, somewhat wrinkled, scarcely latticed, vertex rather posterior.

D'ORBIGNY, Moll. Hist. Cuba, 1853, p. 368, pl. 28, f. 34 to 36.

Hab. Cuba, Martinique.

Mr. Cuning possesses specimens of *O. Antillarum*, both from Cuba and Martinique, in all of which the vertex is inclined more posteriorly, while the shell is less regularly striated and less cancellated than in the Eastern *O. stella*; but the shells are wonderfully alike in general aspect.

Species 3. (Mus. Cuning.)

ORBICULA LAMELLOSA. *Orb. testâ corneâ, fuscâ, suborbiculari, depressâ, lamellis tenuibus elevatis concentricè rugosâ, vertice postico, lævigato.*

THE LAMELLATED ORBICULA. Shell horny, brown, nearly orbicular, depressed, concentrically roughened with thin raised lamellæ, vertex posterior, smooth.

BRODERIP, Pro. Zool. Soc. 1833, p. 124.

Hab. Iquiqui and Bay of Ancon, Peru; Cuning.

This very characteristic species, as related by Mr. Broderip, was found by Mr. Cuning in groups, the specimens being in many instances piled in layers one over the other on a sandy bottom, at a depth ranging from five to nine fathoms. At Ancon they were found attached to dead shells, and also clinging to the wreck of a Spanish vessel of about three hundred tons, that went down in the bay about ten years before. The smitten timbers, for the sheathing was gone to decay, were covered with these shells, much in the same way that beams on land are sometimes infested with parasitic *Fungi*. At Iquiqui they were taken adhering to a living *Mytilus*.

Species 4. (Fig. a, b, Mus. Cuning.)

ORBICULA LEVIS. *Orb. testâ oratâ, corneâ, solidiusculâ,*

rufescente-fulvâ, lævigatâ, undique superficialiter malleatâ, posticè tumido-elevatâ, vertice subobtusâ, anticè depressâ.

THE SMOOTH ORBICULA. Shell ovate, horny, rather solid, reddish-fulvous, smooth, superficially malleated throughout, posteriorly tumidly elevated, vertex rather obtuse, anteriorly depressed.

SOWERBY, Trans. Linn. Soc. 1822, vol. xiii. pt. 2. p. 468. pl. 26. f. 1 a, b, c, d.

Hab. Concepcion, Chili (found attached to *Mytili* at a depth of six fathoms); Cuning.

This species was first described by Mr. Sowerby, in a paper read before the Linnæan Society in December, 1820, from a specimen attached to a grey flint pebble nearly coated by the root of an *Isis*, of which the habitat was not known. Twelve years later it was found attached to shells dredged by Mr. Cuning, as above noted, off Concepcion, Chili. It is a stout horny shell, with the surface smooth and faintly malleated. The vertex, which much inclines posteriorly, is conically raised, swollen, and rather obtuse.

Species 5. (Mus. Cuning.)

ORBICULA TENUIS. *Orb. testâ orbiculari, tenui, pellucido-corneâ, nitente, concentricè striatâ, posticè elevatiusculâ, vertice parvo, subuncinato, deinde ubique depressâ.*

THE THIN ORBICULA. Shell orbicular, thin, transparent-horny, shining, posteriorly a little raised, vertex small, slightly hooked, then everywhere depressed.

SOWERBY, Thes. Conch. vol. i. p. 366. pl. 73. f. 4.

Hab. Chili; Cuning. South Australia.

Compared with the preceding species, the shell of *O. tenuis* is thinner, rounder, and more depressed. The original group of specimens represented in our Plate was collected by Mr. Cuning on the coast of Chili. But Mr. Cuning possesses specimens of an *Orbicula* which appear to me to be in all respects identical with this from South Australia.

Species 6. (Mus. Cuning.)

ORBICULA CUMINGII. *Orb. testâ suborbiculari, crassiusculâ, striis minutis hic illic interruptis radiatâ, posticè tumido-conoidâ, vertice subobtusâ; carneo-albâ, interdum obscurè fasciatâ et radiatâ.*

CUMING'S ORBICULA. Shell nearly orbicular, rather thick, rayed with here and there interrupted striae, posteriorly tumidly conoid, vertex rather obtuse; flesh-white, sometimes obscurely banded and rayed.

BRODERIP, Pro. Zool. Soc. 1833, p. 124.

Orbicula strigata, Broderip.

Hab. Central America (dredged at Payta, St. Elena, Panama, and Isle of Caña, Guatemala, attached to the lower side of stones in sandy mud at low water, and in some instances at a depth of from six to eighteen fathoms); Cuming. Ecuador; D'Orbigny. Mazatlan (on various shells); Carpenter.

Mr. Broderip's *O. strigata*, which he did not describe along with *O. Cumingii* in the Proceedings of the Zoological Society, but as an afterthought when figuring the *Orbicula* in the Transactions, is a less worn state of the species, in which there are faint rays and bands of colour. The upper valve is calcareous and firm, of quite a different type to the horny species of Chili and Peru. The habitats, Malacca and Philippine Islands, given with this species by Mr. Sowerby, in addition to the above, are erroneous. He probably mistook specimens of *O. stella* for it.

Species 7. (Fig. a, b, Mus. Cuming.)

ORBICULA OSTREOIDES. *Orb. testā ovatā, crassiusculā, rudē convexā, interdum conoidā, radiatim densè corrugato-striatā, striis prominentibus, hic illie tumidis et cancellatis, vertice subcentrali.*

THE OYSTER-LIKE ORBICULA. Shell ovate, rather thick, rudely convex, sometimes conoid, radiately densely wrinkle-striated, striae prominent, here and there swollen and cancellated vertex nearly central.

Discina ostreoides, Lamarek, Anim. sans vert. 1819, vol. vi. p. 237.

Orbicula Norvegica, Sowerby (not of Lamarek); Trans. Linn. Soc. 1822, vol. xiii. p. 468. pl. 26. f. 2 a, b, c, d, e, f.

Orbicula striata, Sowerby, Thes. Conch. 1846, vol. i. p. 366. pl. 73. f. 8.

Crania radiosa, Gould.

Orbicula Evansii, Davidson.

Hab. North-west Africa? (in crevices of brown oxide of iron).

This species was originally named by Lamarek from a specimen sent to him in 1819, by Mr. James Sowerby, father of Mr. G. B. Sowerby, who described it the following year in a paper read before the Linnean Society as *Orbicula Norvegica*. He had then discovered it in abundance in the crevices of a quantity of ballast stone, brown oxide of iron, used in the neighbourhood of Lambeth for mending the roads. In Mr. G. B. Sowerby's monograph, many years later, in his son's 'Thesaurus Conchyliorum,' he makes no mention of his mistake in having described this species in the Linnean Transactions as *O. Norvegica*, and names it *striatus* for the first time, although he bears testimony to its being the species on which Lamarek founded his genus *Discina*.

I am of opinion that Mr. Davidson's *O. Evansii*, the original type of which is before me, is a specimen in which the vertex of the upper valve and corresponding disk of the lower valve are more central than usual, owing to its position of attachment; and the under valve is more convex for the same reason. When adhering to a convex crevice, as in the specimen of iron-stone represented in our Plate, the lower-valve is more concave and the disk more central. The locality, Bodegas, California, given by Mr. Davidson with *O. Evansii* on Mr. Cuming's authority, must, I think, be a mistake. The specimens are precisely like those contained in the crevices of ironstone, and are similarly distorted.

MONOGRAPH
OF THE GENUS
LINGULA.

"Have a care that your bills be not stolen."
Shakespeare.



1 a.



1 b.



2 a.



2 b.



3.



3

LINGULA.

PLATE I.

Genus LINGULA, Lamarck.

Testa subequivalvis, tenuis, cornea, interdum subcalcareo, plerumque ceruleo-viridi, posticè plus minus attenuata, umbonibus parvis, subrostratis, pediculo tendineo affixa. Cardo nullus.

Shell nearly equivalve, thin, horny, sometimes a little calcareous, generally blue-green, more or less attenuated, with the umboes small and rather beaked, affixed to a tendinous pedicle. No hinge.

The Duck's Bill shell is rather an anomaly in the series; and as specimens and odd valves of it came to be discovered, there was much curious speculation among naturalists as to its affinities. Seba took it to be a pedunculated Barnacle; Pétiver named it the Duck's Bill, without reference to its natural place in the system; Linnaeus, who either regarded the valves as separate shells, or knew only of one valve, described it as a *Palæta*; Chemnitz called it a *Pinna*, and Dillwyn a *Mytilus*. Further researches are necessary to show whether the length of the pedicle can be regarded as a specific character. It varies materially in the species, but the collectings of individuals have been confined to too few localities. It is more than probable that the pedicle may vary with the nature of the soil, depth, etc. The valves, as seen in collections, vary a little in form, according to the manner in which they have been dried.

Though not common, the *Lingula* abounds in its particular haunts below low-water. Mr. Cuming once saw as many as twenty bushels of *L. anatina* washed ashore in the Bay of Manila, after a stormy typhoon. Another favoured locality appears to be about Moreton Bay, Australia. Three species are from the Sandwich Islands, California, and the West Indies.

Species 1. (Fig. a, b, Mus. Cuming.)

LINGULA OVALIS. *Ling. testâ oblongo-ovali, subangustâ, glabrâ, nitente, ceruleo-viridi, interdum olivaceo tinctâ, apice acuminatâ; valvis utrinque clausis.*

THE OVAL LINGULA. Shell oblong-oval, rather narrow, smooth, shining, blue-green, sometimes tinged with olive; apex acuminate; valves closed on each side.

REEVE, Pro. Zool. Soc. 1841, p. 100.

Hab. Sandwich Islands; Pease.

Eighteen years ago, when I described this species in the Proceedings of the Zoological Society, Mr. Cuming knew

nothing of its habitat. He has lately received specimens from W. H. Pease, Esq., a gentleman much attached to Natural History, and a most assiduous collector of shells, residing at Honolulu, one of the Sandwich Islands. Independently of its oval form, the shell is distinguished from the rest of the *Lingulæ* by the brilliancy of its verdigris blue-green colour.

Species 2. (Fig. a, b, Mus. Cuming.)

LINGULA TUMIDULA. *Ling. testâ corneâ, tenuissimâ, fusco-vel rubro-olivaceâ, subquadratâ, versus apicem parum attenuatâ; umbonibus indistinctis; valvis utrinque clausis.*

THE SWOLLEN LINGULA. Shell horny, very thin, brownish- or reddish-olive, somewhat square, but little attenuated towards the apex; umboes indistinct; valves closed on each side.

REEVE, Pro. Zool. Soc. 1841, p. 100. Conch. Syst. vol. i. p. 180. pl. 125. f. 4.

Eadem var. *Lingula compressa*, Reeve.

Hab. Island of Masbate, Philippines; Cuming. Moreton Bay, Australia; Strange.

The specimen figured of this fine species was collected at Moreton Bay, Australia, by Mr. Strange. The variety *compressa*, which I regarded originally as a distinct species, was collected by Mr. Cuming in sandy mud at low-water, at Palanas, Isle of Masbate, one of the Philippines. The distinctions then noted appear to have resulted from a difference in the mode of drying.

Species 3. (Mus. Cuming.)

LINGULA MURPHIANA. *Ling. testâ oblongo-ovalâ, anticè quadratâ, posticè attenuatâ, umbonibus parvis, acutis, luteo-virescente, cupreo-rufescente tinctâ; valvis utrinque clausis.*

MURPHY'S LINGULA. Shell oblong-ovate, anteriorly square, posteriorly attenuated, umboes small, sharp, yellowish-green, stained with coppery-red; valves closed throughout.

KING, MS. Mus. Cuming.

Hab. Moreton Bay, Australia; Strange.

Whether this should be regarded as an Australian form of *L. anatina* or as a distinct species, it is certain that the

differences are obvious and constant. The late Captain Phillip King, who was an excellent conchologist (witness his paper on the collections of his exploring voyage in the 'Zoological Journal'), was struck by the peculiarities of this *Lingula*, and sent specimens home to Mr. Cuming with the above name. More have been collected by Mr. Strange in nearly the same locality, and all are distinguished from *L. anatina*, collected abundantly by Mr. Cuming in the Bay of Manila, by a more square outline, and by a peculiar coppery-red tone of colour.

Species 4. (Mus. Cuming.)

LINGULA ALBIDA. *Ling. testā elongato-ovali, laevi, subplanatā, ubique albidā, nitente; valvis undique clausis.*

THE WHITISH LINGULA. Shell elongately oval, smooth, rather flat, everywhere whitish, shining; valves closed throughout.

HINDS, Moll. Voy. Sulphur, p. 71. pl. 19. f. 4.

Hab. Bay of Magdalena, California (in sandy mud, at the depth of seven fathoms); Hinds.

A rather solid shell, well defined in growth, rather flat, of a narrow-oval form, without any indication of the green colour which predominates in this genus. It is of a live creamy-white. The pedicle is short, but I have not much faith in the length of the pedicle as a specific character.

It doubtless varies according to circumstances of habitation.

Species 5. (Mus. Cuming.)

LINGULA AUDEBARTI. *Ling. testā oblongā, glabrā, corned, pallidē flavā, viridī transversim pictā, limbo anteriore rotundato, viridī.*

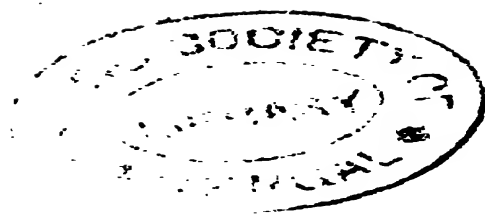
AUDEBART'S LINGULA. Shell oblong, smooth, horny, pale-yellow, transversely painted with green, anterior end rounded, green.

BRODERIP, Pro. Zool. Soc. 1833, p. 125.

Hab. Island of Puna, Bay of Guayaquil (found at about half-tide, in a bottom of hard, coarse sand, from four to six inches below its surface); Cuming.

Mr. Broderip remarks, in describing this species, that "The rounded anterior edge is green, and the transverse lines of that colour are produced by the progressive increase of the shell, which is smooth and parchment-like. In all the dried specimens the thin anterior edge is contracted into a square form, so as to produce a resemblance to a very square-toed shoe, but in its natural state this edge is rounded."

The word printed by Mr. Broderip *Audebardii* was corrected by M. Deshayes in his edition of Lamarck to *Audebarti*; the species being named in honour of M. J. d'Audebart de Férussac.





9.



11.



12 a.



10.



12 b.

Species 6. (Mus. Cuming.)

LINGULA SEMEN. *Ling. testā ovato-oblongā, crassiusculā, planā, albidā, lævissimā, politā, limbo anteriore rotundato.*

THE SEED LINGULA. Shell ovately oblong, rather thick, flat, whitish, very smooth, polished, anterior edge rounded.

BRODERIP, Pro. Zool. Soc. 1833, p. 125.

Hab. Isle of Plata, West Columbia (dredged in fine coral sand, from a depth of seventeen fathoms); Cuming.

Mr. Broderip thinks this may be a young individual, "but the shell is so much firmer than it usually is in *Lingula* (so firm, indeed, as not to have contracted at all in drying), that I cannot but look on it as an undescribed species. In size and appearance it bears a near resemblance to a melon-seed."

Species 7. (Mus. Cuming.)

LINGULA HIRUNDO. *Ling. testā oblongo-quadratā, tenui, virescente, posticè abruptè attenuatā, umbonibus subacutis.*

THE SWALLOW LINGULA. Shell oblong-square, thin, greenish, posteriorly abruptly attenuated, umboes rather sharp.

Hab. Port Curtis, north-east Australia; Stutchbury.

Several specimens of this little semitransparent species were collected by Mr. Stutchbury at the above-named locality.

Species 8. (Mus. Cuming.)

LINGULA ANTILLARUM. *Ling. testā oblongo-ovalā, antice subquadratā, albidā, cærulescente-viridi, versus umbones pallidè tinctā, valvis undique clausis.*

THE WEST INDIAN LINGULA. Shell oblong-ovate, somewhat square anteriorly, faintly tinged with blue-green towards the umboes.

Hab. Martinique (dredged at a depth of sixteen fathoms).

Of this small species from Martinique, Mr. Cuming has only a single specimen. It appears to be distinct, and the habitat is peculiar.

Species 9. (Mus. Cuming.)

LINGULA EXUSTA. *Ling. testā oblongo-ovalā, tenuiculā, rufescente-luteā, versus marginem intensè fuscā, nitente, umbonibus subacutè rostratis.*

THE SWARTHY LINGULA. Shell oblong-ovate, rather

thin, reddish-yellow, deeply stained with brown towards the margin, shining, umboes rather sharply beaked.

Hab. Moreton Bay, Australia; Strange.

If *L. Murphiana* be an Australian form of *L. anatina*, this might be regarded as the representative in the same locality of *L. hians*. Both species exhibit a peculiar coppery-redness, heightened in this to a dark, shining, swarthy tone of colour.

Species 10. (Fig. 10 and 11, Mus. Cuming.)

LINGULA ANATINA. *Ling. testā oblongā, antice rotundatā, posticè attenuatā, umbonibus subrostratis, intensè viridi, valvis utrinque clausis.*

THE DUCK'S-BILL LINGULA. Shell oblong, rounded at the anterior end, attenuated at the posterior, where the umboes are somewhat beaked, bright-green, valves closed on each side.

LAMARCK, Anim. sans vert. vol. vii. p. 390.

Rostrum anatis, Pétiver.

Patella unguis, Linnaeus.

Pinna unguis seu lingua, Chemnitz.

Mytilus lingua, Dillwyn.

Hab. Molucca and Philippine Islands.

This well-known species having been described by Pétiver as the Duck's-bill, *Rostrum anatis*, before Linnaeus erroneously named an odd valve of it as a *Patella*, the Lamarckian application of the original title to the binomial form of nomenclature may take precedence.

Mr. Cuming happened to be at Manilla in 1836, after, an unusually boisterous typhoon, when as many as twenty bushels of this species were collected on the shores of the Bay; and he procured more than a hundred new species of shells on this occasion which he never met with again.

Species 11. (Fig. 12 a, b, Mus. Cuming.)

LINGULA HIANS. *Ling. testā elongato-ovalā, posticè subacutè attenuatā, tenui, utrinque hiante, pallidè virescente, umbonibus acutè rostratis.*

THE GAPING LINGULA. Shell elongately ovate, rather sharply attenuated posteriorly, thin, gaping at both ends, pale-green, umboes sharply beaked.

SWAINSON, Zool. Illus. vol. ii. pl. 2.

Hab. China.

The gaping of this species does not appear to depend upon the drying of the shell; it always dries into a gaping attitude, which is not the case with other species.

MONOGRAPH

OF THE GENUS

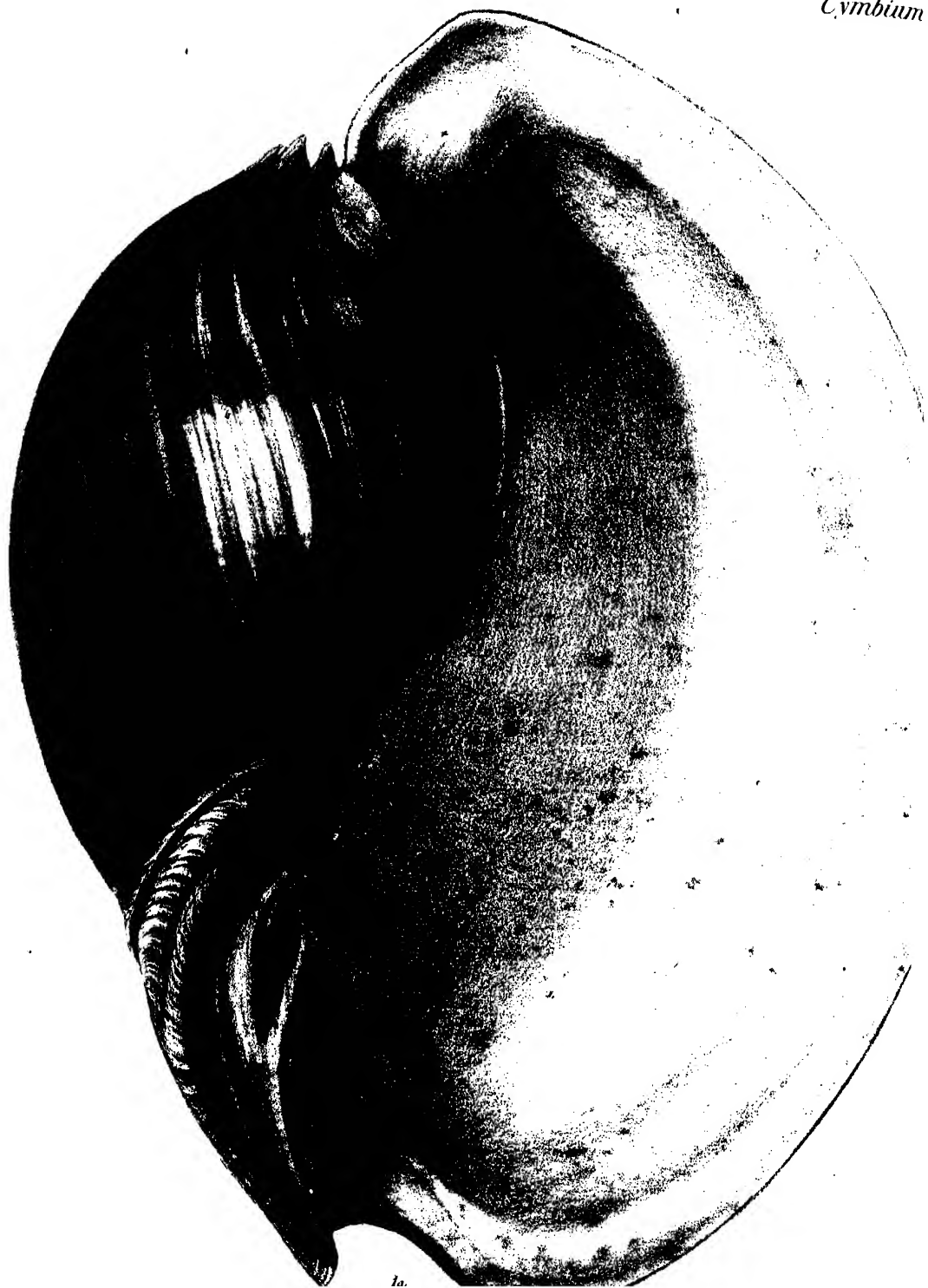
C Y M B I U M

“ If consequence do but approve my dream,

My boat sails freely, both with wind and stream.”

Shakspeare.

▲



CYMBIUM.

PLATE I.

Genus CYMBIUM, Klein.

Testa globoso-ovata vel oblonga, plus minus ampliter ventricosa, plerumque fulvoscens, sæpe castaneo fuscata, spirâ brevi, apice papillari, sæpe immersâ, interdum omnino occultâ, anfractibus levibus, supernè contractis, margine interdum squamis coronato, interdum integro, producto, circa apicem canaliculatis; columellâ constrictâ, validè plicatâ, plicis duabus ad quatuor; aperturâ peramplâ, labro simplici, supra spiram sæpè dilatato-inflato.

Shell globosely ovate or oblong, more or less largely ventricose, generally fulvous, often banded with chestnut, spire short, papillary at the apex, often immersed, sometimes wholly concealed, whorls smooth, contracted at the upper part, margin sometimes coronated with scales, sometimes entire and produced, channelled round the apex; columella constricted, strongly plaited, plaits two to four; aperture very large, lip simple, often dilately inflated above the spire.

The Melon and Boat Volutes, as the large boldly convoluted shells of this genus have been aptly called, were known to authors before the time of Linneus, more especially to Klein, Petiver, and Seba, by the term *Cymbium*, and the word has been used in a generic sense in later times by Schumacher and Menke. In the Melon Volutes the upper edge of the whorls is, with one exception, coronated with erect or decumbent scales; in the Boat Volutes it is produced into a ledge stretching outwardly or inwardly, with the spire mostly immersed, and sometimes altogether concealed. Dr. Gray, in his able paper on the *Volutidae* (Proc. Zool. Soc. 1855), states that the animal of the Melon Volute is oviparous, "the eggs being deposited in cartilaginous egg-cases, like those of the other zoophagous mollusks;" while the animal of the Boat Volute is ovo-viviparous, "the young when born being of large size, with a large irregular callous apex." These observations are doubtless well founded; and the shells show obviously enough that the mantle of the animal is more developed and expanded in the latter than in the former, as may be seen by the vitrified glazing on *C. proboscideale*, and more or less on *C. Neptuni*. The correctness of the sub-division of this genus by Broderip into two genera, *Melo* and *Cymba*, is therefore supported by observations of the animal. There has, however, been some confusion in the nomenclature. Dr. Gray, instead of following Mr. Broderip, has applied the term *Cymbium* to the Melons, and has distinguished the Boats by a new term, *Fetus*, coined

from the French specific name of Adanson, *l'Yét*. In the midst of this imbroglia of terms I have thought it best to fall back upon the old name *Cynabium*, embracing both forms, separated as sections. There are seventeen species in all, nine of the coronated forms, including one of intermediate form, *C. Indicum*, in which the whorls close over the spire, and are neither coronated nor ledged, and eight ledged species. Of the Melons, six are natives of the eastern seas, ranging probably to North Australia, and three are truly Australian. Of the Boats, seven are peculiar to the shores of West Africa, opposite the Canary Islands, and the remaining species, *C. olla*, borders on that locality with a more northerly range, reaching the coast of Spain. There are no *Cymbia* in the waters of the western hemisphere.

Species 1. (Mus. Cuning.)

CYMBIUM ÆTHIOPICUM. *Cymb. testâ suborbiculari-ovalâ, ampliter inflata, fulvâ, castaneo-fusco plus minus tinctâ et bifasciatâ, fasciis interdum in maculis, spirâ parvâ, anfractibus supernè contractis, squamis breviusculis nunc erectis, nunc decumbentibus, regulariter coronatis; columellâ triplicatâ.*

THE ÆTHIOPIAN CYMBIUM. Shell somewhat orbicularly ovate, largely inflated, fulvous, more or less stained and double-banded with chestnut-brown, bands sometimes in spots, spire small, whorls contracted at the upper part, regularly coronated with rather short scales, which are sometimes erect, sometimes decumbent; columella three-plaited.

Voluta Æthiopica, Linneus, Syst. Nat. p. 1195.

Voluta Nautica, Linneus.

Cymbium coronatum, Klein.

Cymbium ceramicum, Petiver.

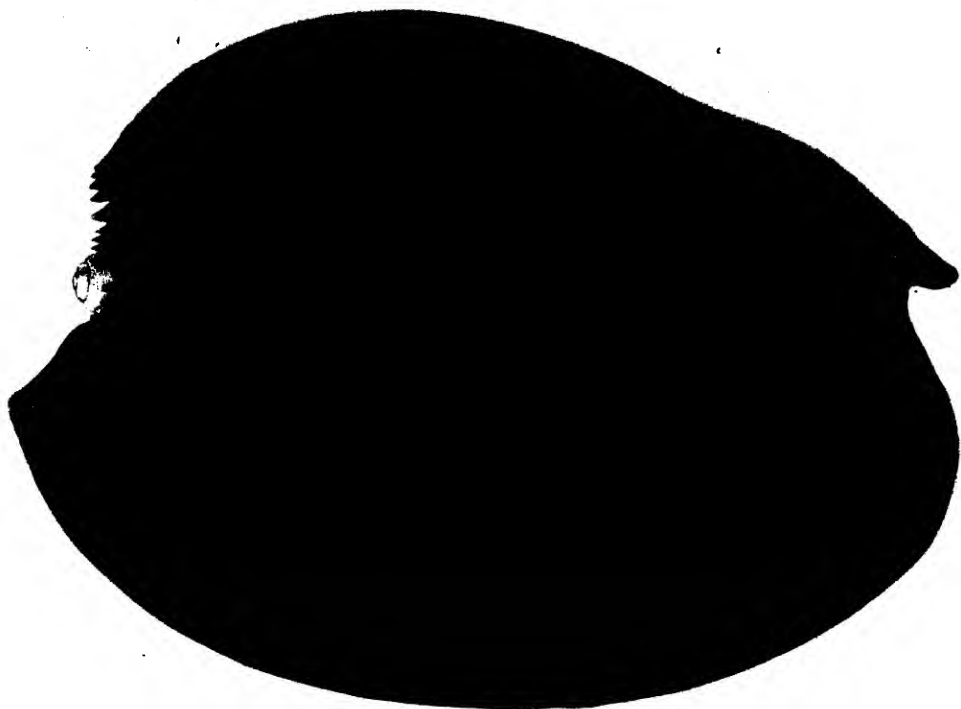
Cymbium Æthiopicum, Schumacher.

Melo Æthiopica, Broderip.

Melo Nautica, Broderip.

Hab. Eastern Seas.

Two Linnean and Lamarckian species, *Voluta Æthiopica* and *V. Nautica*, are included under this head, the latter being merely a variety of the former, in which the scales are decumbent. Dr. Gray was the first to unite them, and I am quite of his opinion. The species was well-known to conchologists, before Linneus's time, by the names *Cymbium coronatum* and *C. ceramicum*, and it would have been well if the author of the 'Systema Nature,' whose nomenclature has become law in natural history, had adopted one of them.



C Y M B I U M

PLATE II.

Species I. (Fig. *b, c*, Mus. Cuning.)

This is a state of the *Cymbium Althiopicum*, not observed of any other species of the genus, in which the enamelled lining of the aperture is stained with a deep blood-red colouring. The shell is stoutly developed, of quite mature growth, and the colouring matter is not diffused evenly, but appears to drain, as it were, across the shell in separate flows.

There is a specimen in the British Museum, exactly like the one here figured from Mr. Cuning's collection. Both are of a reddish-chestnut colour externally, and show very little indication on the body-whorl of the bands which are peculiar to the species in an earlier stage of growth.

December, 1860.





C Y M B I U M .

PLATE III.

Species 2. (Fig. a, b, Mus. Brit.)

CYMBIUM REGIUM. *Cymb. testā subquadrato-ovatā, obso-ventricosā, cinnamomeo-fuscā, albo conspicuè grandimaculatā, maculis irregularibus, interdum undatis et in fasciis dispositis, anfractibus supernè subdepressè canalicentatis, ad angulum obtusis, coronatis, squamis breviusculis, columellā triplicatā.*

THE ROYAL CYMBIUM. Shell somewhat squarely ovate, stoutly ventricose, cinnamon-brown, conspicuously largely blotched with white, spots irregular, sometimes waved and disposed in bands, whorls rather depressly channelled round the upper part, obtuse at the angle, coronated, scales rather short, columella three-plaited.

Voluta regia, Schubert and Wagner, Conch. Cab. vol. xii. p. 13. pl. 218. f. 3038, 3039.

Cymbium Æthiopicum, var., Gray.

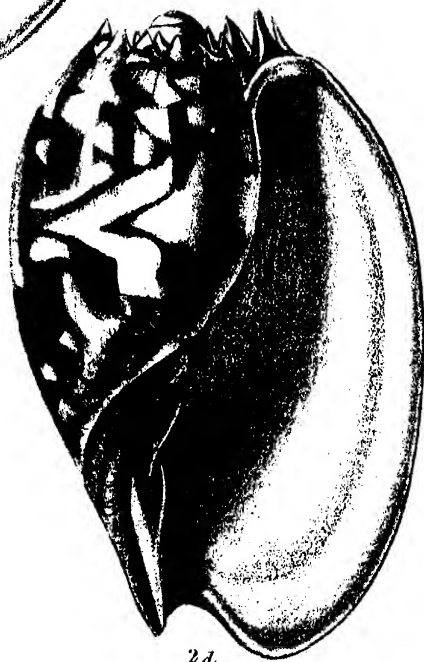
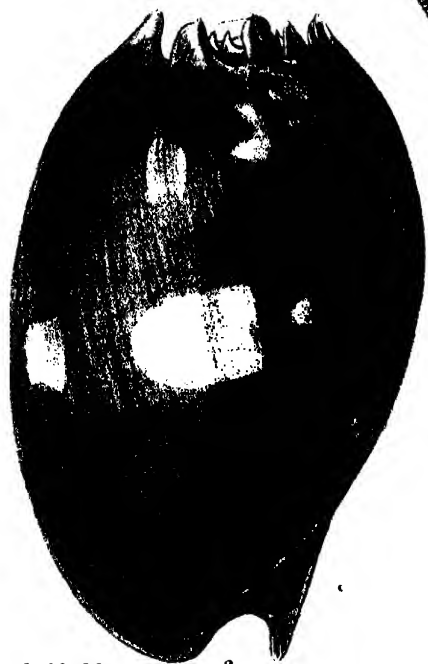
Hab. Eastern Seas.

In the fine collection of *Cymbia* in the British Museum, which includes the Broderipian collection, may be readily separated a series of very characteristic specimens, mixed with specimens of *C. Æthiopicum*, which appear to me to be distinct; and I have no hesitation in assigning them to the *Voluta regia* of Schubert and Wagner, described and figured in their Supplement to the Conchylien Cabinet. Broderip gave the name of *regius* to the *C. Broderipii* described by Gray in Griffith's Cuvier's Animal Kingdom, thinking probably that Schubert and Wagner's figure represented that species, but no light has been thrown upon it by subsequent monographers of the genus. Dr. Gray gives a copious and tolerably accurate list of synonyms in

his monograph of *Volutidae* in the Museum Catalogue, including even unpublished names, which had better have remained unpublished, but no mention is made of the published species of Schubert and Wagner. It may be argued that the *V. regia* of those authors is described as being four-plaited, whereas the species under consideration is three-plaited, but it will be seen by their figure, that they have regarded, like many others, as a plait, what is merely a thickened margin of the columellar growth. We may notice, in passing, another error in Dr. Gray's synonymy of the genus. In the same plate of Schubert and Wagner's Supplement, in which the figures of *C. regium* occur, are two very characteristic figures of Lamarck's *V. ducalis*. This is not, as Dr. Gray supposes, a synonym of *C. armatum* (*C. diadema* var.), but the very characteristic Australian species, of which there is so extensive and beautiful a series in the British Museum, named by Broderip *Melo umbilicatus*.

The figures both of *C. ducalis* and *regium* in the Supplement to the Conchylien Cabinet, are taken from young specimens, and I have thought it necessary to figure also young specimens to show the connection. At Pl. IV. 2 c and 2 d, is figured the youngest specimen known to me of *C. regium*, and above it is figured the youngest specimen known to me of *C. Æthiopicum*. In no specimen of the first do I find any indication of the bands which are so conspicuous in the second in an early stage of growth, but become more or less obsolete with age. In *C. regium* the interrupted white blotches become more conspicuous with age, and in all states and varieties of the species, the shell is of a squarer and more obtusely ventricose form than *C. Æthiopicum*.





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PLATE IV.

Species 1. (Fig. 1 *d*, Mus. Brit.)

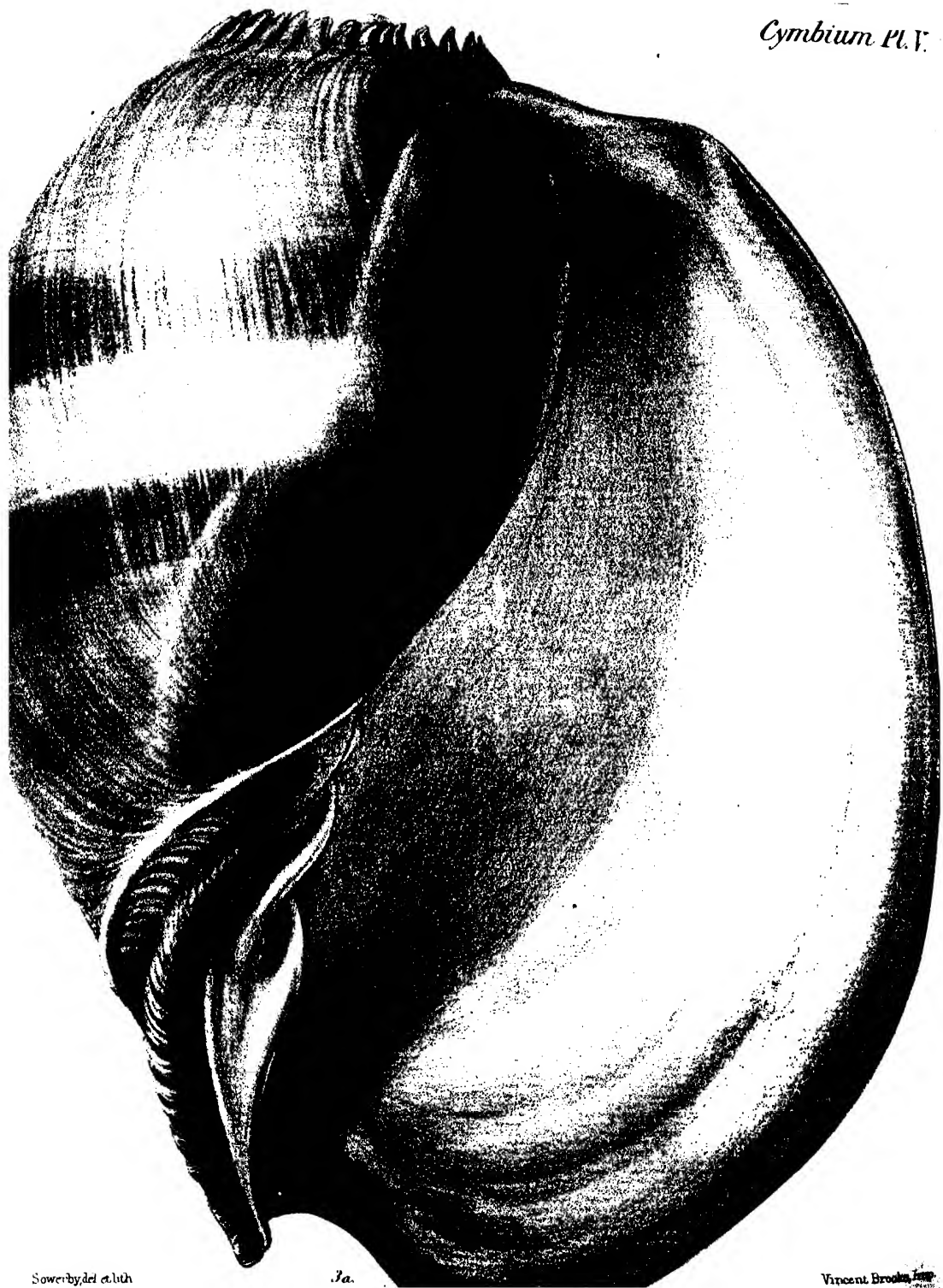
Species 2. (Fig. 2 *c* and 2 *d*, Mus. Brit.)

In this Plate are figured in juxtaposition *C. Ethiopicum* and *C. regium*, in an early stage of growth. It will be seen, on comparison, that these two species, hitherto confounded by British authors, are really distinct, as shown by Schubert and Wagner in their Supplement to the 'Conchylien Cabinet' of Martini and Chemnitz. *C. Ethiopicum*, Fig. 1 *d*, is of a more ventricose and constrictedly convoluted form, the striae of growth are more

gathered in by a broader and more forcibly contorted development of the columella and its plaits; the banded painting of dark blotches is characteristic, and the scales are more numerous. In *C. regium*, Fig. 2 *c*, 2 *d*, these peculiarities are replaced by others of good specific value, a shorter and less constricted columella, more distant scales, a more obtusely square form, and a very characteristic painting of blotches of white; and the differences are plainly observable in a state modified only by age in the adults of the two species represented in Plates I. and II.

December, 1860.

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C Y M B I U M .

PLATE V.

Species 3. (Fig. a, Mus. Cuming.)

CYMBIUM BRODERIPPII. *Cymb. testā ovatā vel globoso-ovalā, plus minus ventricosā, pallidē luteo-olivaceā, obscurē latifasciatā, vel aurantio-luteā, olivaceo-fusco fasciatim reticulatā et obliquē strigatā, anfractibus supernè latè plano-canaliculatis, ad angulum squamatis, squamis brevibus, numerosis, confertis; columellā triplicatā.*

BRODERIP'S CYMBIUM. Shell ovate or globosely ovate, more or less ventricose, pale yellowish-olive, obscurely broadly banded, or orange-yellow, reticulated in a banded manner, and streaked obliquely with olive-brown, whorls broadly flatly channelled round the upper part, scaled at the angle, scales short, numerous, close-set; columella three-plaited.

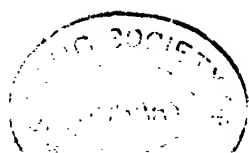
Melo Broderipii, Gray in Griffith's Cuvier's Animal Kingdom, Moll. pl. xxvi.

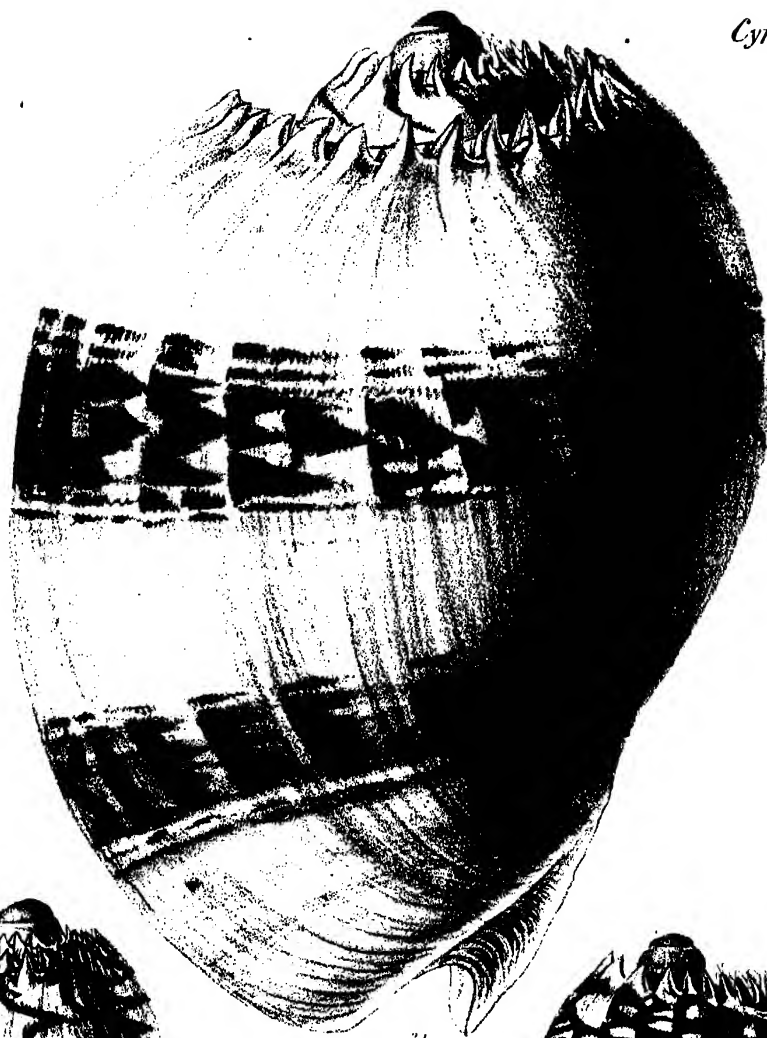
Cymbium Broderipii, Gray in Brit. Mus. Catalogue.

Hab. Philippine Islands; Cuming.

The size of our Plate is quite inadequate to the representation of this colossal species in its maturest and largest state. Mr. Cuming possesses a specimen measuring fourteen inches in length, and thirty inches in girth; larger than any specimen of any species of the genus known to me. In a smaller and younger state, as represented in Plate VI., *C. Broderipii* is not uncommon, and may be always recognized by its broadly-channelled spire, coronated with scales that are peculiarly short, numerous, and close-set. It is only in younger and smaller specimens than that represented in the accompanying Plate that any trace of marking remains.

December, 1860.

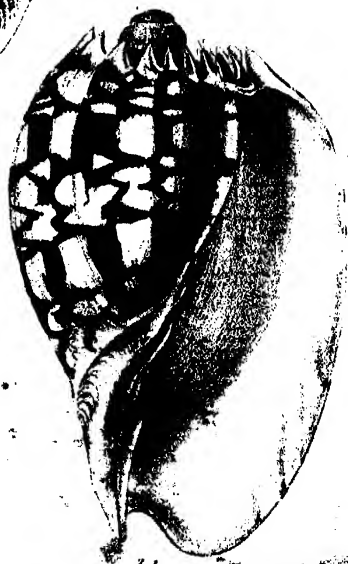




3b.



3c.



3d.

C Y M B I U M .

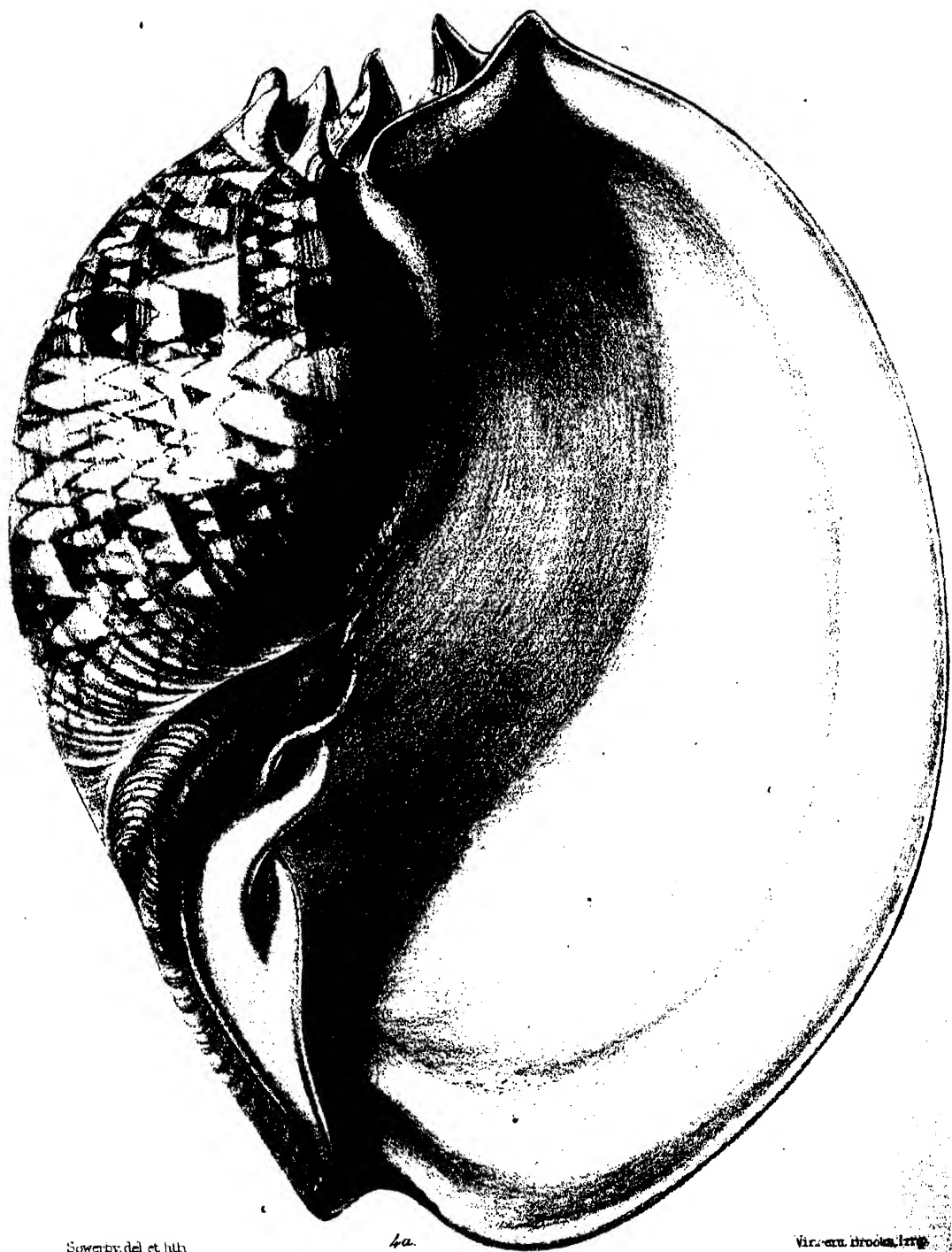
PLATE VI.

Species 3. (Fig. *b*, *c*, *d*, Mus. Cuming.)

Cymbina Broderipii, described and figured in its maturer and larger form in the preceding Plate, varies curiously in different stages of growth. In the youngest stage of well-marked varieties, Fig. 3 *c* and 3 *d*, the shell is profusely reticulated, and obliquely streaked with dark olive-brown upon a yellowish ground ; but in a more advanced stage, Fig. 3 *b*, the ground-colour of the shell is of a deeper orange hue, and the olive-brown colouring assumes a banded form, stretching into a freckle as if it

were soon to disappear, as in the specimen Fig. 3 *a*. This cannot, perhaps, be looked upon as a permanent rule of growth, as there are also young specimens with little or no marking. But no large specimens are known to have any marking, and a comparison of specimens of all ages shows undoubtedly a tendency in the painting organs of the animal to become enfeebled, just as, in the *Melanie* and other genera, the sculpture organs of the animal become enfeebled as it advances in growth.

December, 1860.



C Y M B I U M.

PLATE VII.

Species 4. (Fig. 4 a, Mus. Brit.)

CYMBIUM DUCALE. *Cymb. testā oblongā, vel ovali, vel rotundato-ovalī, pallidē luteā, undique maculis castaneis irregularibus biserialim cinctā, venis rufis vel ustulato-aurantiis undique trigono-reticulatā, spirā profundē immersā, anfractibus supernē angustē rotundatis, sparsim squamatis, squamis primum brevibus, deinde cito elongatioribus, distantioribus, partim castaneo tinctis; columellā, triplientā.*

THE DECAL CYMBIUM. Shell oblong, or ovate, or rotundately ovate, pale yellow, encircled with two bands of irregular chestnut blotches, and everywhere triangularly reticulated with red or burnt-orange veins, spire deeply immersed, whorls narrowly rounded at the upper part, sparingly scaled, scales at first short, then quickly more elongated and distant, partially chestnut blotched; columella three-plaited.

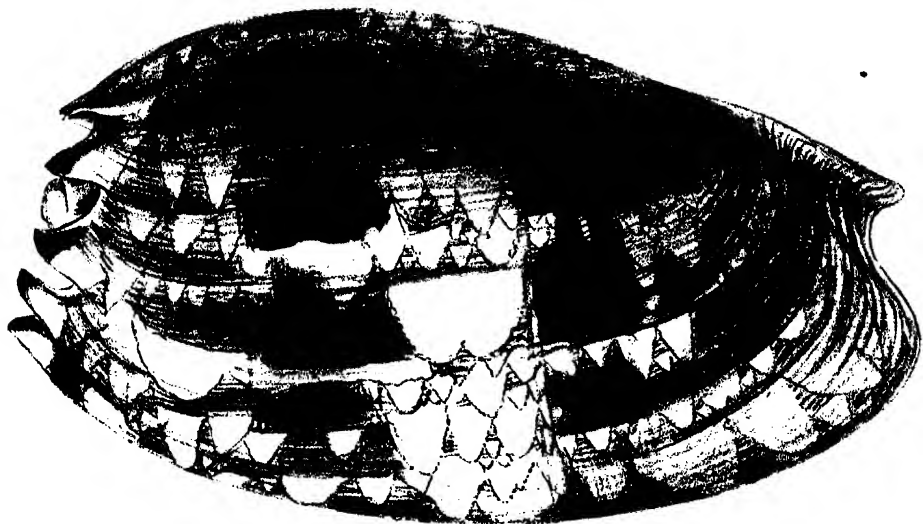
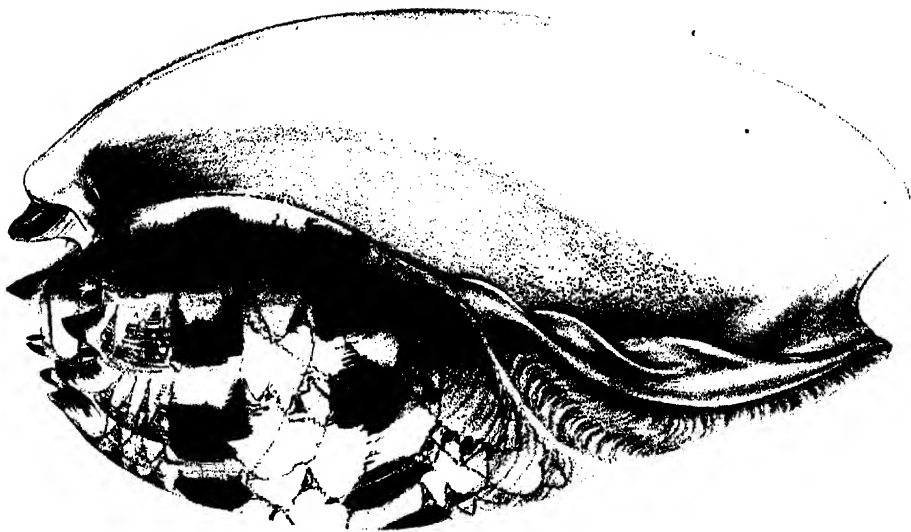
Voluta ducale, Lamarck, Anim. sans vert. vol. x. p. 377.

Melo umbilicatus, Broderip.

Hab. Moreton Bay, Australia.

The very beautiful *Cymbium* represented in this and the three following Plates I assign to Lamarck's *Voluta ducale*. All the specimens that I have seen, including a series in the British Museum in all stages of growth, from little more than an inch in length to a size larger than could be got into our Plate, are distinguished by a peculiarity of painting that is well defined in the original description of Lamarck, namely, an elaborate network of fine reddish- or burnt-orange veins, crossed by two rather distant bands of chestnut blotches. In a figure of the species given by Schubert and Wagner, in their Supplement to the 'Conchylien Cabinet' of Martini and Chemnitz, this peculiarity of painting is equally well defined; but both the description of Lamarck and the figure of Schubert and Wagner are taken from young specimens before the spire had become immersed by the corona of rapidly enlarging scales, in which maturer state the species is the *Melo umbilicatus* of Broderip.





C Y M B I U M.

PLATE VIII.

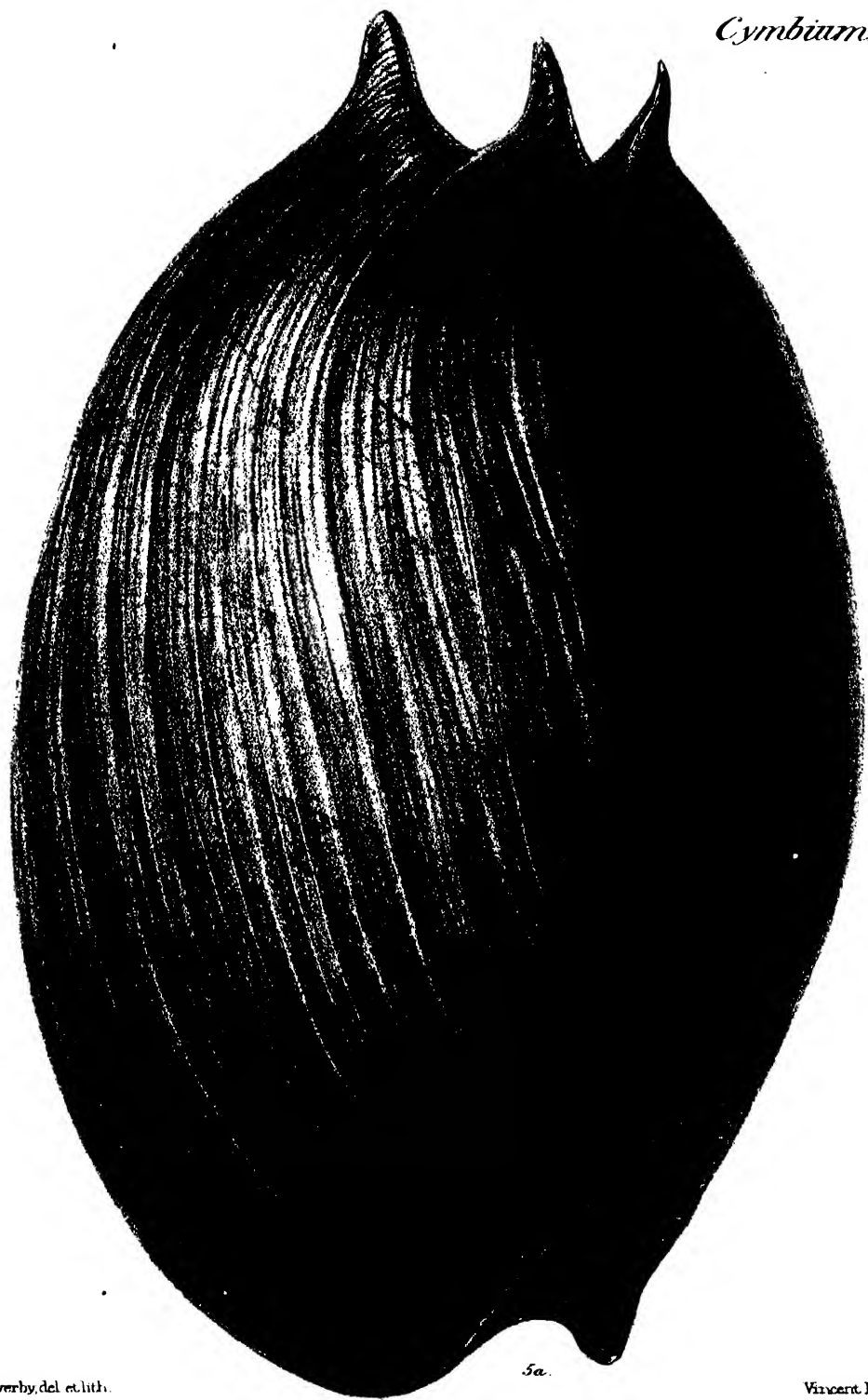
Species 4. (Fig. *b, c*, Mus. Cuming; Fig. *d, e*,
Mus. Brit.)

The specimens of *Cymbium ducale* figured in this Plate represent the species in young and in middle stages of growth, with the dark bands more or less conspicuously developed, but the network constant. In the shell Fig. 4 *b, 4 c*, in Mr. Cuming' collection, the chestnut blotches

are larger and darker than in any specimen that I have seen, and the scales which have not reached to the length to which they would be developed in another whorl are stained with the same dark chestnut as the bands. In the younger specimens, Fig. 4 *d, 4 e*, from the collection of the British Museum, the chestnut blotches are only faintly indicated, and the network is stronger.

December, 1860.





C Y M B I U M.

PLATE IX.

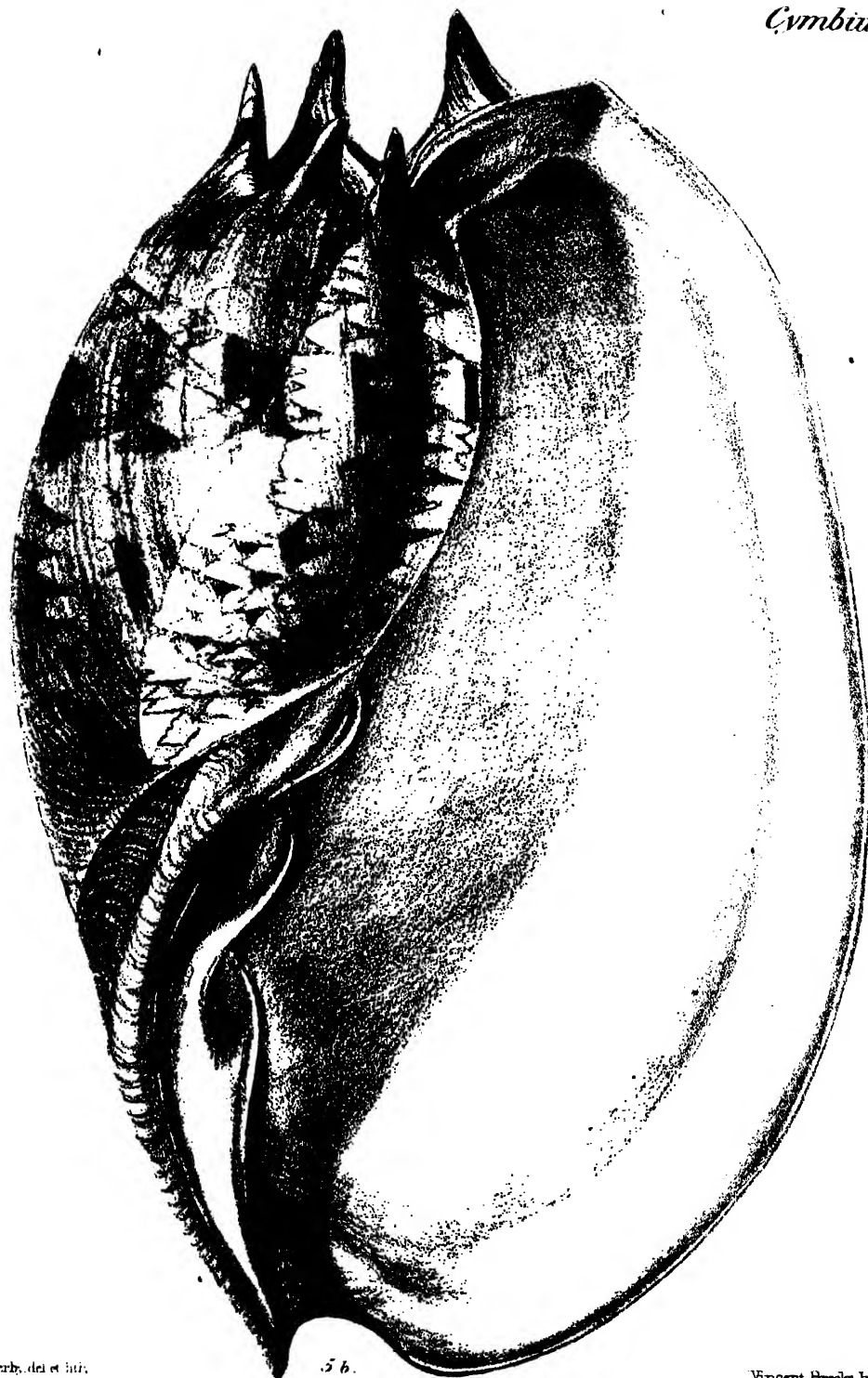
Species 4. (Fig. 5 *a*, Mus. Brit.)

In the specimen of *Cymbium ducate* here figured we have the original type of Mr. Broderip's *Melo umbilicatus*. As compared with the specimen figured at Plate VII. it is remarkable for its slenderly oblong form and lighter texture, with the scales, in their correlation of growth, pro-

duced almost into horns, below which the spire is correspondingly sunk. There are two such specimens in the British Museum, both covered with a beautiful epidermis, showing the faintest possible traces of the underlying network.

December, 1860.





C Y M B I U M .

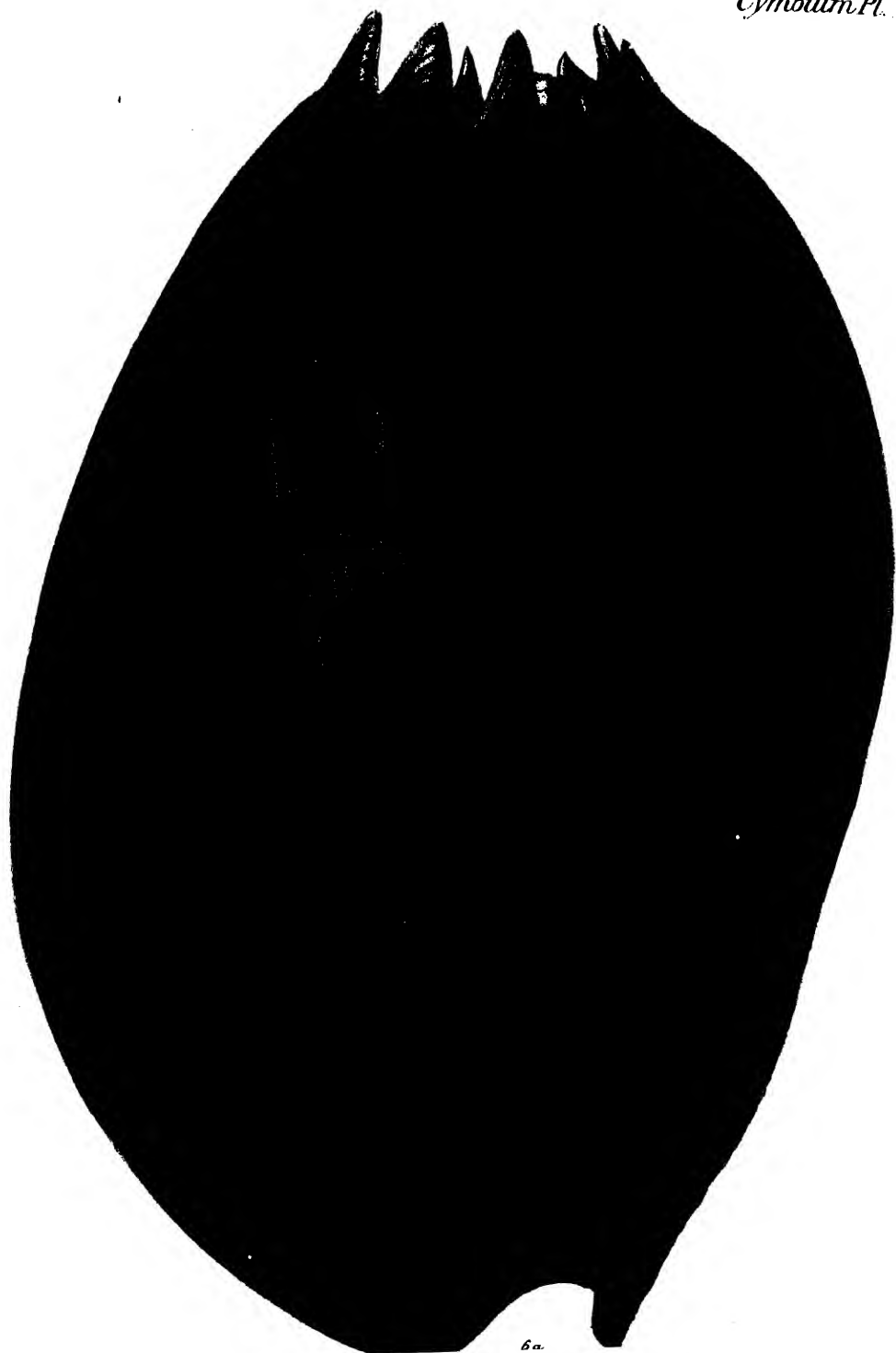
PLATE X.

Species 4. (Fig. 5 *b*, Mus. Brit.)

The accompanying figure is a front view of the specimen represented in the preceding Plate, the type of Mr. Broderip's *Melo umbilicatus*, and it will be observed by the numbering that I at first regarded it as a species distinct from *Cymbium ducale*. Notwithstanding its slenderly oblong form and slight texture as compared with the

heavy rounded specimen figured at Plate VII. (and there is even a larger and thicker specimen than this in the British Museum), the species is the same. The detail of painting, of scales, and of structure throughout is the same in both, and the smaller specimens represented at Plate VIII. Fig. 4 *b*, *c*, help to show the connection between them.

December, 1860.



C Y M B I U M .

PLATE XI.

Species 6. (Fig. a, Mus. Brit.)

CYMBIUM GEORGINÆ. *Cynb. testā ovalā, ventricosā, rufescente-aurantiā, obscurè latè bifasciātā, venis rufofuscis longitudinaliter strigatā et partim trigono-reticulatā, anfractibus supernè subcoarctatim squamatis, squamis mucronatis, decumbentibus, ætate rapidè elongatis, castaneo tinctis; columellā triplicatā.*

GEORGINA'S CYMBIUM. Shell ovate, ventricose, reddish-orange, obscurely broadly banded, longitudinally streaked and partially triangularly reticulated with red-brown veins, whorls rather contractedly scaled, scales pointed, decumbent, elongated rapidly with age, stained with chestnut; columella three-plaited.

Melo Georginæ, Gray in Griffith's *Animal Kingdom*, pl. 34.

Cymbium Georginæ, Gray in *Brit. Mus. Catalogue*.

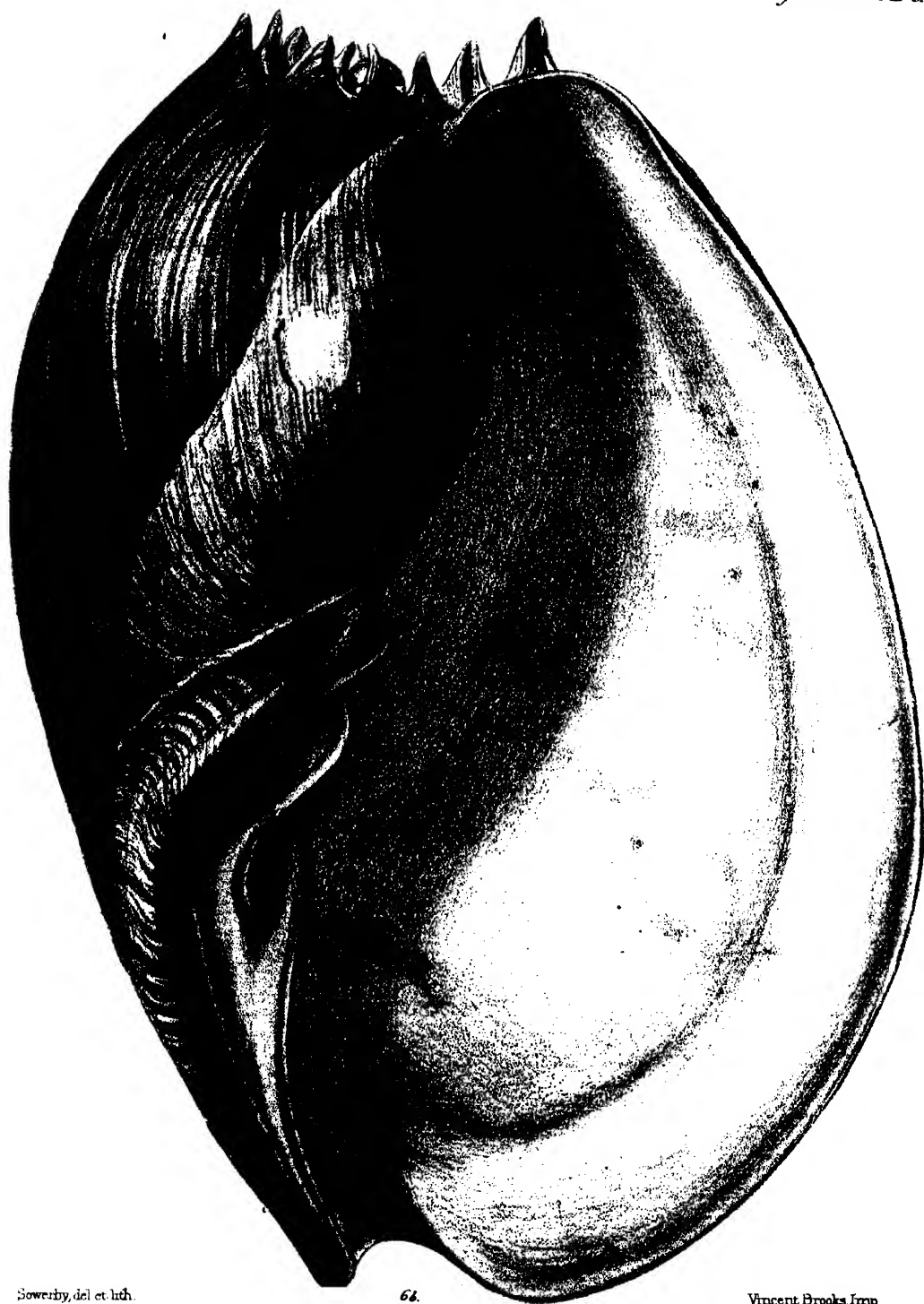
Melo mucronatus, Sowerby.

Hab. Moreton Bay, Port Essington, etc., Australia.

Dr. Gray, whose politeness in giving shells the Chris-

tian names of ladies is unrivalled, well distinguished this species in 1833; but in his monograph of *Volutide*, in the *Museum Catalogue*, published more than twenty years later, he remarks of this and the preceding species that they appear to be varieties of *C. diadema*. "If we select certain specimens of each," says Dr. Gray, "they appear very distinct; but if a large number of specimens of different ages, from various localities, are arranged together, the differences gradually merge into each other, and it is difficult, if not impossible, to separate them from one another." Of the Linnæan *V. diadema* and *armata* this may be said truly enough, for they are one species, but of *C. ducale* and *Georginæ* I find no difficulty in separating at a glance the largest number of specimens that were probably ever brought together. The general form of *C. Georginæ*, as represented in the accompanying Plate, is constant, with very little modification; the detail of painting, described in our next Plate, is even more characteristic.





C Y M B I U M .

PLATE XII.

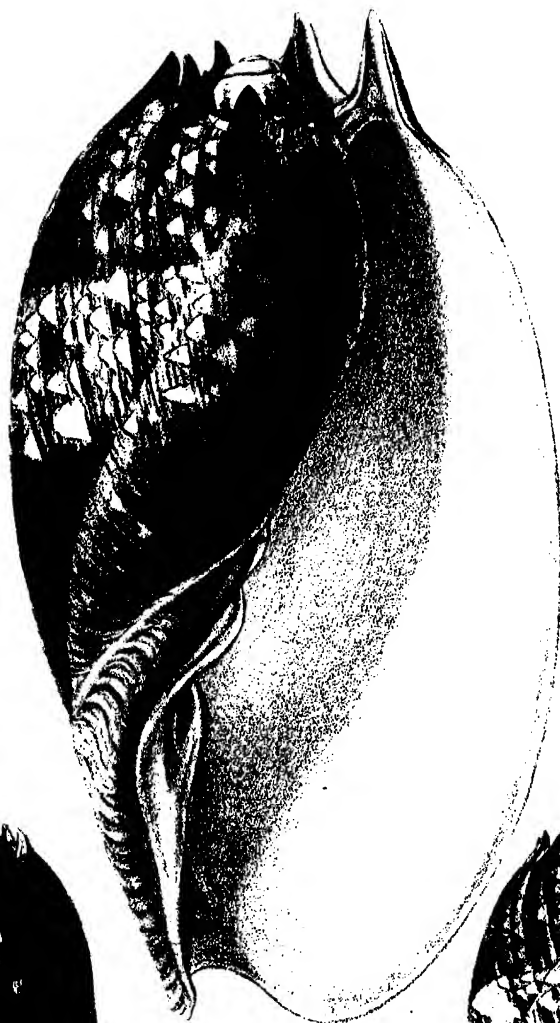
Species 6. (Fig. 6, Mus. Brit.)

The painting of *C. Georginae*, except in young specimens, is seldom seen beyond the pillar surface of the body whorl. It consists of irregularly conglomerated linear streaks of red-brown, mingled with a partial net-work of

veins of the same colour, and the shell has always a general foxy-red hue. The spines are rather decumbent, and more or less blotched with chestnut. Our figure represents a front view of the specimen figured in the preceding Plate.

December, 1860.





6c.



Sowerby, del. et. lith.

6d.



6e.

Vincent Brooks, lith.

C Y M B I U M.

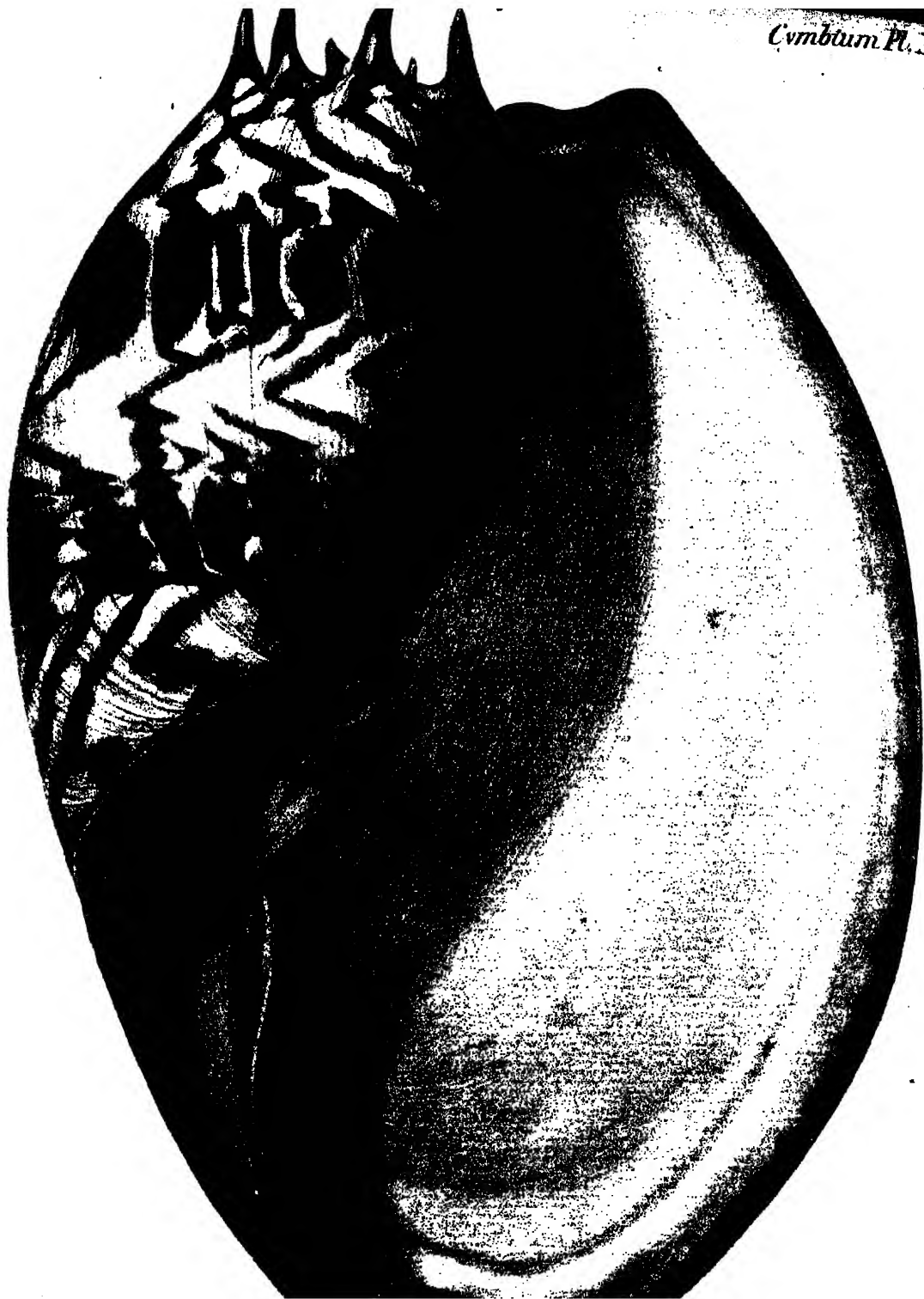
PLATE XIII.

Species 6. (Fig. *c*, Mus. Cuming; Fig. *d*, *e*, Mus. Brit.)

Cymbium Georgiæ, like other *Cymbia*, has the painting much more fully displayed in an earlier stage of growth. The linear streaks of brown noticed in the preceding Plate as a marked characteristic of the species, are constantly

and fully developed, and the network described in the large specimen as partial, is displayed in younger specimens with the fullness, almost, of an Admiral Cone. Both specimens are distinguished by a bright fresh reddish-orange hue.

February, 1860.



CYMBIUM.

PLATE XIV.

Species 7. (Mus. nost.)

CYMBIUM DIADEMA. *Cymb. testā ovatā vel suboblongo-
ovatā, utrinque attenuatā, albidā vel aurantio-lacteā,
cinnamomeo vel ustulato-brunneo plus minus tinctā et
undato-strigatā, strigis bifasciatim nebulatis, spirā
subimmersā, anfractibus superne obtusè angulatis, squa-
mis subdistantibus, sæpe elongatis, conspicuè coronatis;
columellā validè triplicatā.*

THE DIADEM CYMBIUM. Shell ovate or rather oblong-
ovate, attenuated at each end, whitish or orange-
cream, more or less stained and wave-streaked with
cinnamon or burnt brown, streaks clouding in two
bands, spire rather immersed, whorls obtusely angled
round the upper part, conspicuously coronated with
rather distant, often elongated spines; columella
strongly three-plaited.

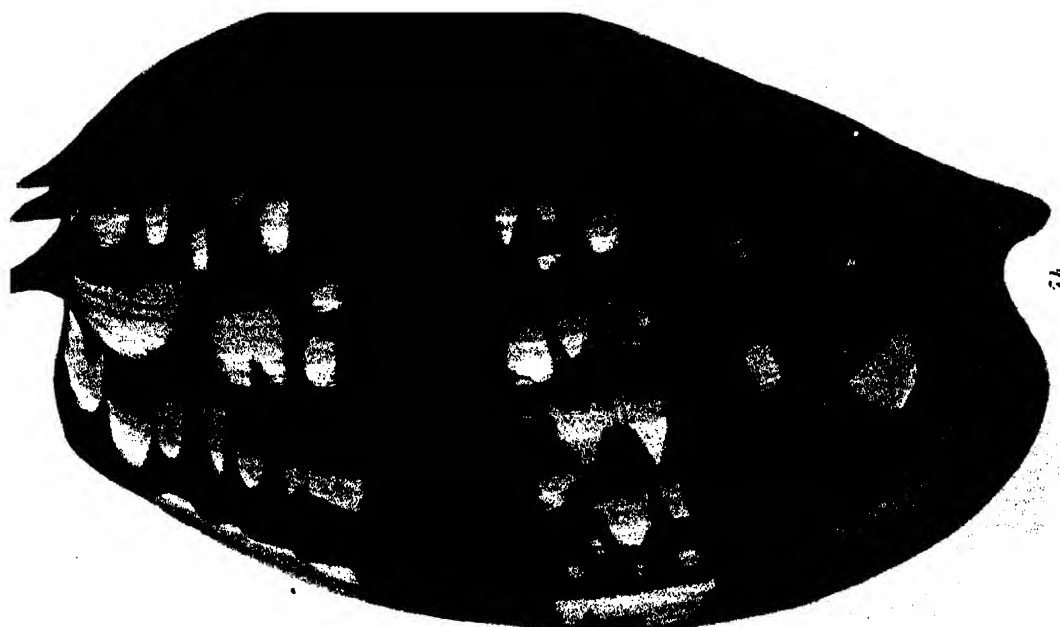
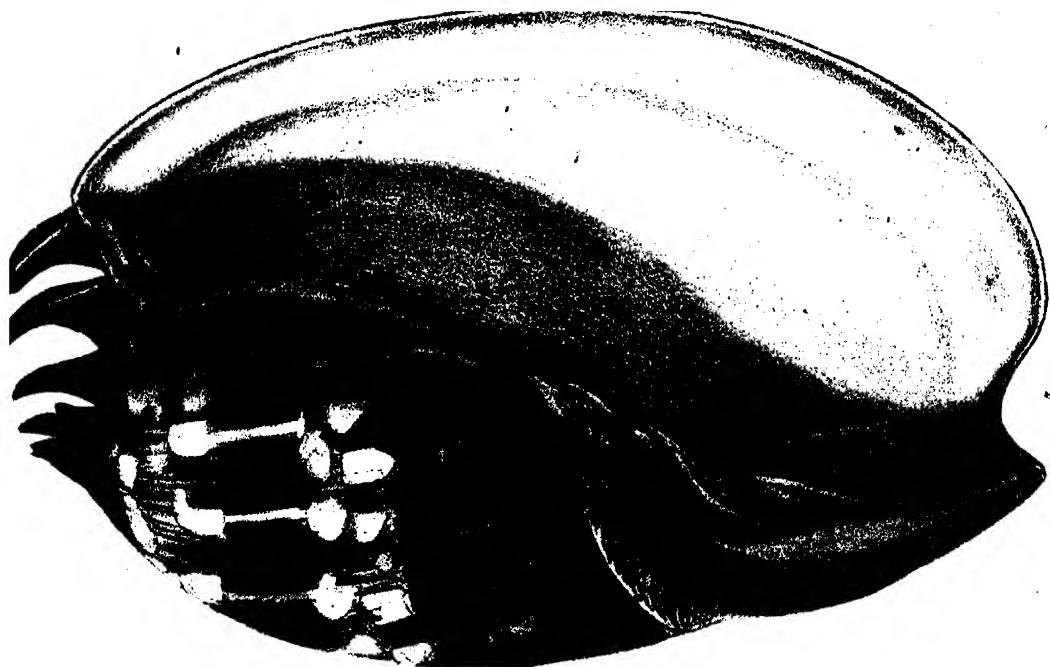
Voluta diadema, Lamarck, Anim. sans vert. vol. vi. p. 375.

Voluta armata, Lamarck.

Hab. Eastern Seas.

This is the most variable of all the *Cymbia*; and the
more slender forms of the species, with long spines, have
been separated under the name of *Voluta armata*, La-
marck (*Melo armatus*, Broderip, *Cymbium armatum*, Gray),
from the more square-built and stoutly ventricose speci-
mens with shorter spines. But these variations, depend-
ing on the laws of correlation of growth, are not accom-
panied by a separate system of specific characters, as in
C. ducale and *Georgina*. It is perfectly impossible to
draw a line between them. The fine specimen represented
in the accompanying Plate is about intermediate between
them, leaning rather to the *armatum* form of the spe-
cies. In more slenderly convoluted specimens the spire
is more sunk and the corona of scales more conspicuously
elongated.

February, 1861.



C Y M B I U M.

PLATE XV.

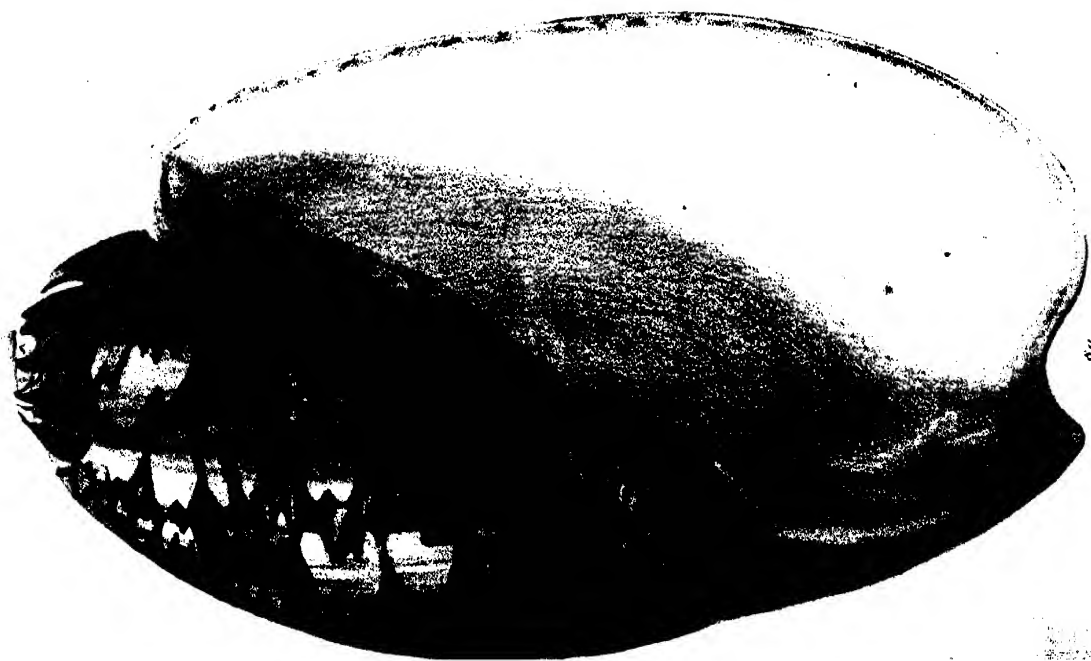
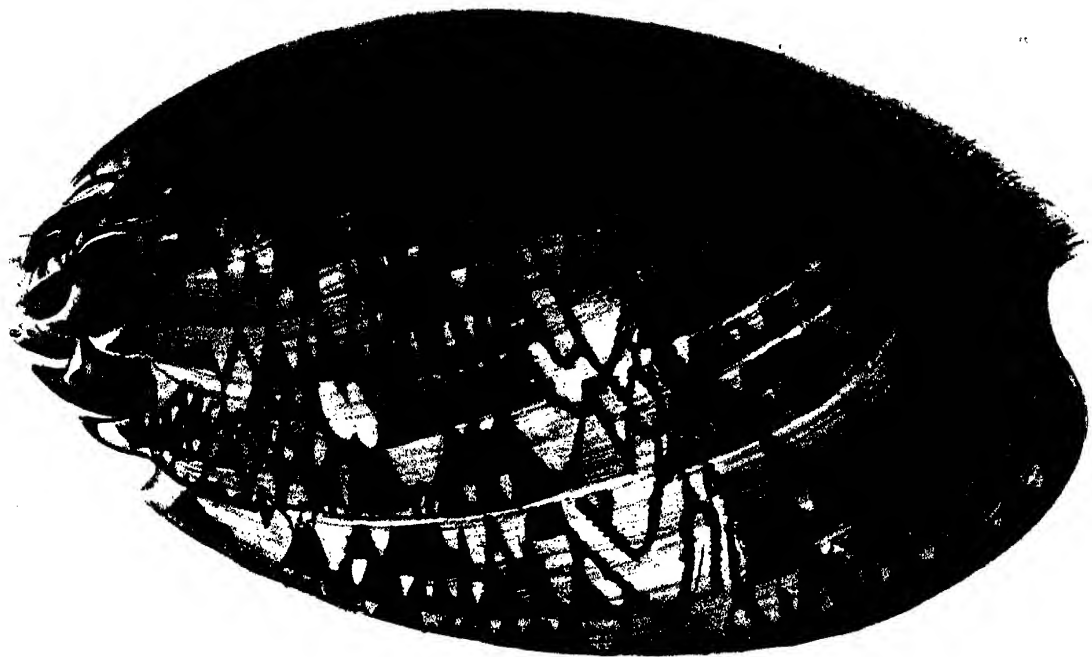
Species 7. (Fig. *b*, Mus. Cuming; Fig. *c*, Mus. Brit.)

The specimens here figured of *C. diadema* represent the more squarely ovate form of the species, with the scales of the corona shorter, and they are distinguished by a more densely clouded painting. In the specimen Fig. 7 *b*,

from Mr. Cuming's collection, the colour is a rich cinnamon-brown or chestnut, conspicuously two-banded, and the interspaces merely show a somewhat sparse and irregular mottling of white. The specimen Fig. 7 *c*, from the British Museum, is of a more squarely stunted form, less darkly coloured.

February, 1861.





C Y M B I U M.

PLATE XVI.

Species 8. (Fig. *a, b*, Mus. Cuming.)

CYMBIUM MILTONIS. *Cymb. testā cylindraceo-ovatā, versus spiram coarctatā, fulvescente-lactēā, purpureo-castaneo copiosè reticulato-venosā et bifasciatim umbratā, spirā subproductā, anfractibus superne appressis, squamis arcuato-decumbentibus coronatis; aperturā versus basin effusā, columellā triplicatā, incurvā, æpissimè rictu aurantiā.*

MILTON'S CYMBIUM. Shell cylindrically ovate, contracted towards the spire, fulvous cream-colour, copiously reticulately veined, and shaded in two broad bands with purple-chestnut, spire rather produced, whorls appressed round the upper part, coronated with arcuately decumbent scales; aperture effused towards the base, columella three-plaited, incurved, mostly bright-orange.

Melo Miltonis, Gray, Griffith's Cuvier's 'Animal Kingdom,' pl. 29.

Melo cylindratus, Broderick.

Hab. Swan River, Australia.

This very elegant Swan River *Cymbium*, named in honour of Lord Milton, afterwards Earl Fitzwilliam, is a well-marked species, both in respect of form and colour, with scarcely any appreciable variation. The upper part of the whorls, it will be seen, is peculiarly attenuately appressed, so that they drop more than usual in coiling, and it follows that the scales have an arched decumbent growth, leaving the spire produced and comparatively erect. The painting is an elaborate network, shaded into bands, and of a uniform purple-chestnut or chocolate colour, the columella being bright orange.

February, 1861.





C Y M B I U M.

PLATE XVII.

Species 9. (Mus. Brit.)

CYMBIUM INDICUM. *Cymb. testâ subgloboso-ventricosâ, auranio-fulcâ, castaneo variè fasciatim nebulatâ et maculatâ, spirâ fere vel omnino immersâ, anfractibus supernè declinè-coarctatis, laevibus, haud squamatis; aperturâ supernè sinuatâ, columellâ tripliatâ.*

THE INDIAN CYMBIUM. Shell somewhat globosely ventricose, orange-fulvous, variously clouded and blotched in a banded manner with chestnut, spire almost or entirely immersed, whorls slopingly contracted round the upper part, smooth, not scaled; aperture sinuated at the upper part, columella three-plaited.

Voluta Indica, Gmelin, Syst. Nat. p. 3467.

Melo Indica, Broderip.

Voluta Melo, Ann. du Mus.

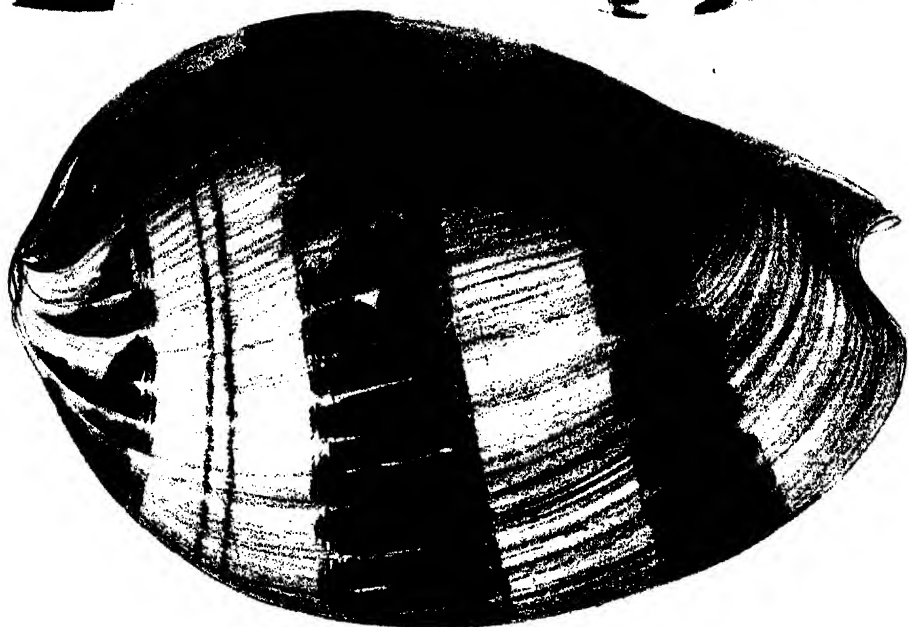
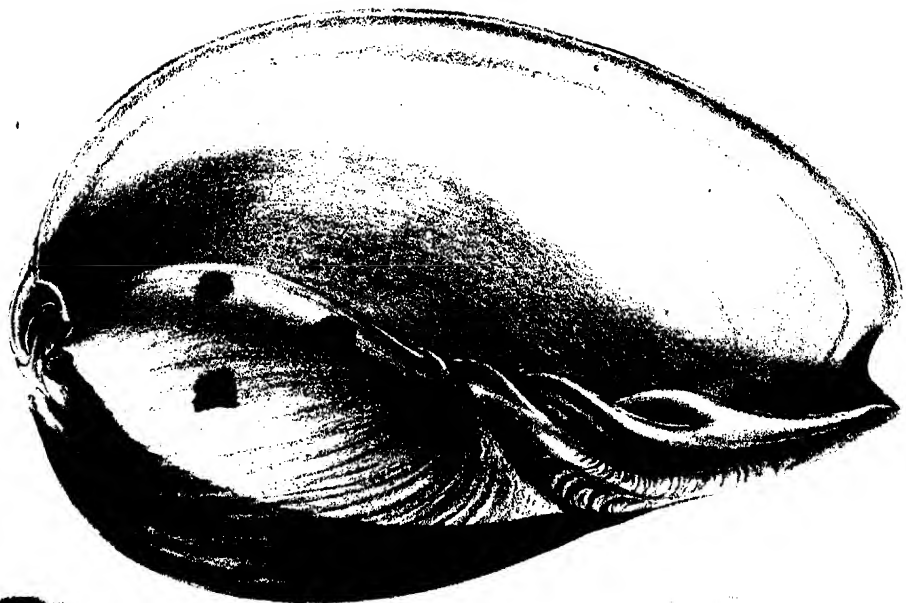
Cymbium Melo, Menke.

Hab. Eastern seas.

The principal characteristic of this well-known species is that it is neither coronated nor channelled; the upper portion of the whorls is closely slopingly contracted, so as almost or altogether to cover the spire. It has little variation either of colour or form, and is rarely found of such large size as the fine specimen in the British Museum, represented in the accompanying Plate.

February, 1861.





C Y M B I U M

PLATE XVIII.

Species 9. (Fig. *b*, Mus. Cuming.)

The shell here figured is a specimen of *Cymbium Indicum* of ordinary size, fully coloured. Unlike other *Cymbium*, the dark painting appears in three bands, an additional band being present in place, as it were, of the corona of scales. The bands are more frequently broken up into clouded irregular blotches.

Species 10. (Fig. *a*, Mus. Cuming;

Fig. *b*, *c*, Mus. Brit.)

CYMBIUM TESSELLATUM. *Cymb. testā ovalā, vel pyriformi-ovalā, ventricosā, lutescente, castaneo sparsim maculatā, interdum obscurē bifasciatā, spirā brevi, plus minus immersā, anfractibus supernè subcanaliculatis, squamis appressè decumbentibus coronatis, columellā quadruplicatā.*

THE TESSELLATED CYMBIUM. Shell ovate, or pyriform ovate, ventricose, yellowish, sparingly blotched with chestnut, obscurely two-banded, spire short, 1 or less immersed, whorls slightly channelled in the upper part, coronated with appressly decumbent scales, columella four-plaited.

Voluta tessellata, Lamarek, Anim. sans. vert. vol. x. p. 377.

Melo tessellatus, Broderip.

Hab. Eastern Seas.

In colour and marking this species resembles a pale *C. Indicum*, but it is at once distinguished by the very characteristic corona of decumbent scales. In the young state, Fig. 10 *b*, *c*, the scales are comparatively erect; in the mature shell, Fig. 10 *a*, they become quite decumbent over the apex of the spire.

February, 1861.



C Y M B I U M .

PLATE XIX.

Species 11. (Mus. Cuming.)

CYMBIUM PROBOSCIDALE. *Cymb. testâ elongato-ovatâ, subcylindraceâ, utrinque attenuatâ, aurantio-fulvâ, spirâ brevissimâ, apice mamillari, ciliò concavo-immerso, anfractibus supernè contractis, et acutè rudè productis; columellâ quadripliatâ.*

THE PROBOSCIS CYMBIUM. Shell elongately ovate, somewhat cylindrical, attenuated at each end, orange-fulvous, spire **very** short, apex mamillary, quickly concavely immersed, whorls contracted and sharply rudely produced at the upper part; columella four-plaited.

Folula proboscidalis, Lamarck, Anim. sans vert. vol. x. p. 382.

Folula cymbium, pars, Linnæus.

Cymba proboscidalis, Broderip.

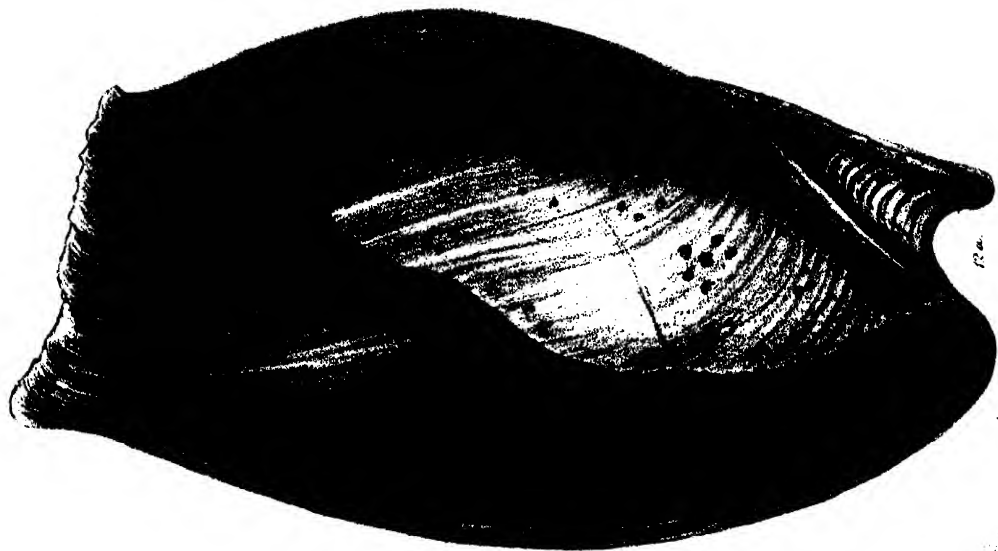
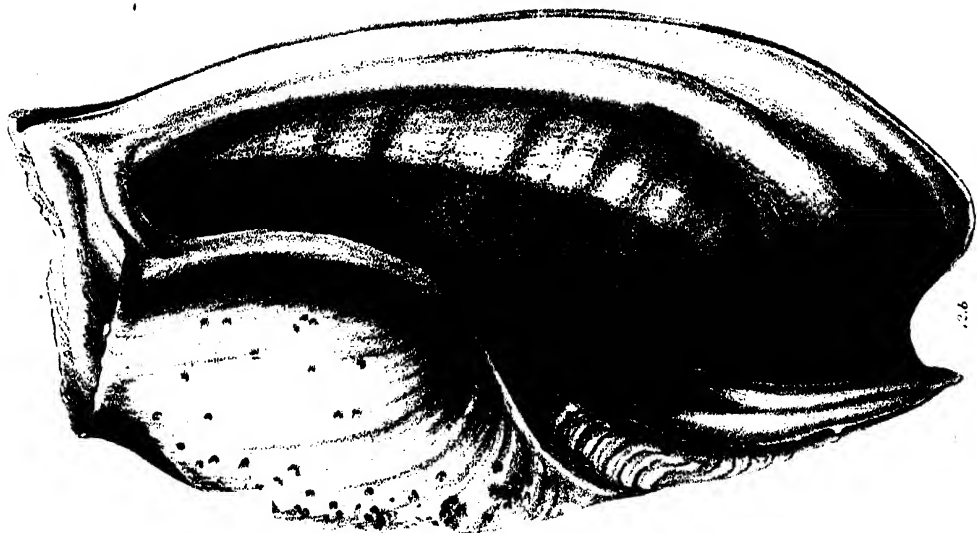
Cymbium proboscidale, Adams.

Yetus proboscidalis, pars, Gray.

Hab. West Africa.

This species commences the second section of the genus, in which the upper part of the whorls, instead of being coronated, is produced into an undivided ledge, and the shell is more covered by the mantle. In *C. proboscidale* the left side of the mantle covers the shell entirely, secreting a vitrified glazing over the surface, which is generally roughened in parts with pimples arising from the intervention of particles of sand or some such substance. The upper ledge of the whorls is so produced in this species as to form a broad hollow channel around the spire, entirely concealing the apex from view by its callous deposit of enamel. Both ends of the shell are attenuately contracted, the contraction increasing with age. It has no coloured bands or marking.

February, 1861.



C Y M B I U M .

PLATE XX.

Species 12. (Fig. *a, b, c, d*, Mus. Cuming.)

CYMBIUM PORCINUM. *Cymb. testā cylindraceo-ovatā, sub-reclā, flavescente, spirā brevissimā, apice mamillari, parum exserto, anfractibus supernè rudè acutè dilatato-productis, circa apicem latè canaliculatis; columellā bi-triplicatā.*

THE HOG CYMBIUM. Shell cylindrically ovate, rather straight, yellowish, spire very short, apex mamillary, but little exserted, whorls rudely sharply dilately produced round the upper part, broadly channelled round the apex; columella two- to three-plaited.

Voluta porcina, Lamarck, Anim. sans vert. vol. x. p. 383.

Voluta cymbium, pars, Linneus.

Cymbium porcinum, Menke.

Cymba porcina, Broderip.

Vetus proboscidalis, pars, Gray.

Hab. West Africa.

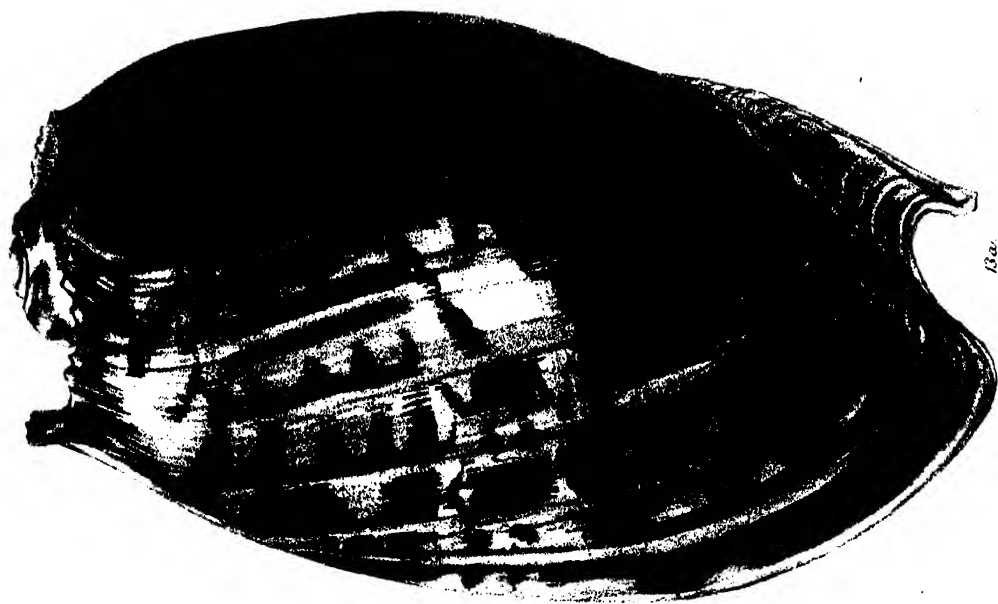
Conchologists are divided in opinion as to whether this is a distinct species, or merely a variety or young of the preceding. Mr. Lowe, the latest authority on the subject, says (Proc. Linn. Soc. 1860, p. 193), "Dr. Gray unites *C. proboscidale* with *C. porcinum*, of which it may possibly prove, indeed, to be only a large, mature or full-developed

state or form; but further observations of the shells and animals conjointly seem still requisite to justify such combinations." In the face of this remark, coming from so experienced an observer as Mr. Lowe, I have kept the species distinct, but I must confess my inability to make out more than one in an early stage of growth. All the very young and more advanced specimens, of which there are many in collections, have the straight form and more dilated corona-ledge of *C. porcina*, and it is not improbable therefore that the attenuated contraction of the ends of the shell of *C. proboscidale*, like the callous overlaying and immersion of the apex, may be the result of age. Still, specimens of *C. proboscidale* are known in a state which is apparently scarcely mature, and all have an additional winding plait at the base of the columella.

Dr. Gray calls in question a remark made by Mr. Adams in his 'Genera,' that this section of the *Cymbia* have a deciduous nucleus. Mr. Cuming certainly possesses specimens of *C. porcinum* in which the nucleus, of a rude swollen growth, such as represented in Fig. 12 *c*, has been cast, still leaving a mamillary apex; and he possesses also a specimen of a cast nucleus, with the base almost walled in, as it would be prior to being cast off.

February, 1861.





C Y M B I U M .

PLATE XXI.

Species 13. (Mus. Cuning.)

CYMBIUM CISIUM. *Cymb. testâ subquadrato-oblongâ, fulvâ aut glaucescente, purpureo-castaneo nebulatâ undato-strigatâ et latifasciatâ, spirâ brevissimâ, subimmersâ, anfractibus plano-convexis, supernè rudè acutè productis, circa spiram subangustâ et profundè canaliculatis: columellâ triplicatâ, ustulato-castaneo vividè tinctâ.*

THE CHARIOT CYMBIUM. Shell somewhat squarely oblong, fulvous or glaucous, wave-streaked and broadly banded in a clouded manner with purple-chestnut, spire very short, somewhat immersed, whorls flatly convex, rudely sharply produced round the upper part, rather narrowly and deeply channelled around the spire; columella three-plaited, richly stained with scorched chestnut.

Voluta cymbium, Lamarck, Anim. sans vert. vol. x. p. 380 (not of Linnaeus).

Cymbium excavatum, pars, Martini.

Cymbium cisiium, Menke.

Cymba cymbium, Broderip.

Cymbium cymbium, Adams.

Fetus cymbium, Gray.

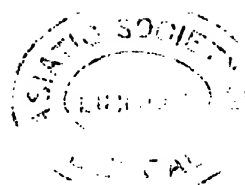
Cymba gracilis, Broderip.

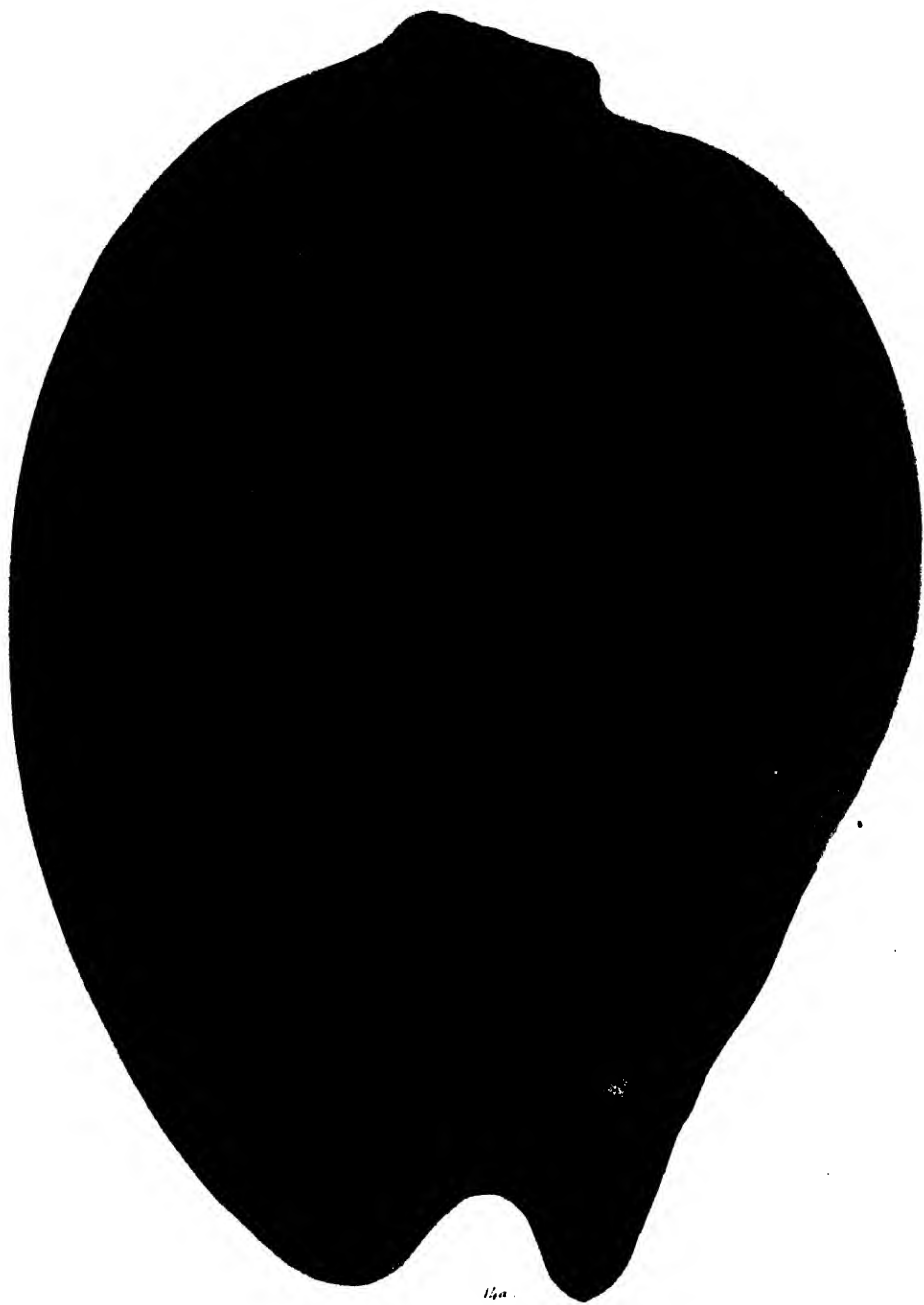
Cymbium gracile, Adams.

Hab. West Africa.

It is to be regretted that Mr. Broderip, Mr. Adams, and Dr. Gray have followed Lamarck in assigning Linnaeus's *Voluta cymbium* to this species, notwithstanding the convincing testimony to the contrary given by Deshayes in a note to the species in his edition of the 'Animaux sans Vertèbres.' It was the practice of Linnaeus to attach numbers on specimens in ink, corresponding with numbers written by him in ink against the descriptions in his private copy of the 'Systema Naturæ.' The original type of Linnaeus's *V. cymbium* is in the possession of our Linnaean Society, and I find it, upon examination, to be a young *Cymbium porcium*, or *proboscudate*, which are probably one and the same species. The number on this specimen agrees with the number in Linnaeus's private copy of the 'Systema.' Linnaeus's synonymy was, however, very confusing on this point. The shell of *C. cisiium* was not known to him, and he referred to a figure of it in Gualtieri (Test. pl. 29. f. B) in illustration of his *Voluta cymbium*. On looking to this figure in Linnaeus's own copy of Gualtieri, I find the name *V. cymbium* in the margin in Linnaeus's handwriting; but he appears, subsequently, to have discovered his error, for in his latest synonymy of the species in the 'Museum Ulricæ' the reference to this figure is suppressed.

February, 1861.





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CYMBIUM.

PLATE XXII.

Species 14. (Mus. Cuming.)

CYMBIUM NEPTUNI. *Cymb. testā subgloboso-ovatā, inflatā, aurantio-fulvā, epidermide fibrosā olivaceo-nigrā imbutā, spirā brevissimā, occultā, anfractibus supernè in nucleo rotundato concavo contractis, ad marginem subproductis; columellā quadriplicatā.*

NEPTUNE'S CYMBIUM. Shell somewhat globosely ovate, inflated, orange-fulvous, covered with a fibrous olive-black epidermis, spire very short, concealed, whorls contracted at the upper part into a round concave nucleus, slightly produced at the edge; columella four-plaited.

Folula Neptuni, Gmelin, Syst. Nat. p. 3167.

Folula Neptuni, pars, Lamarek.

Cymba Neptuni, pars, Broderip.

Cymbium Neptuni, pars, Adams.

Cymba Tritonis, Broderip.

Cymbium Tritonis, Adams.

Fetus Neptuni, Gray.

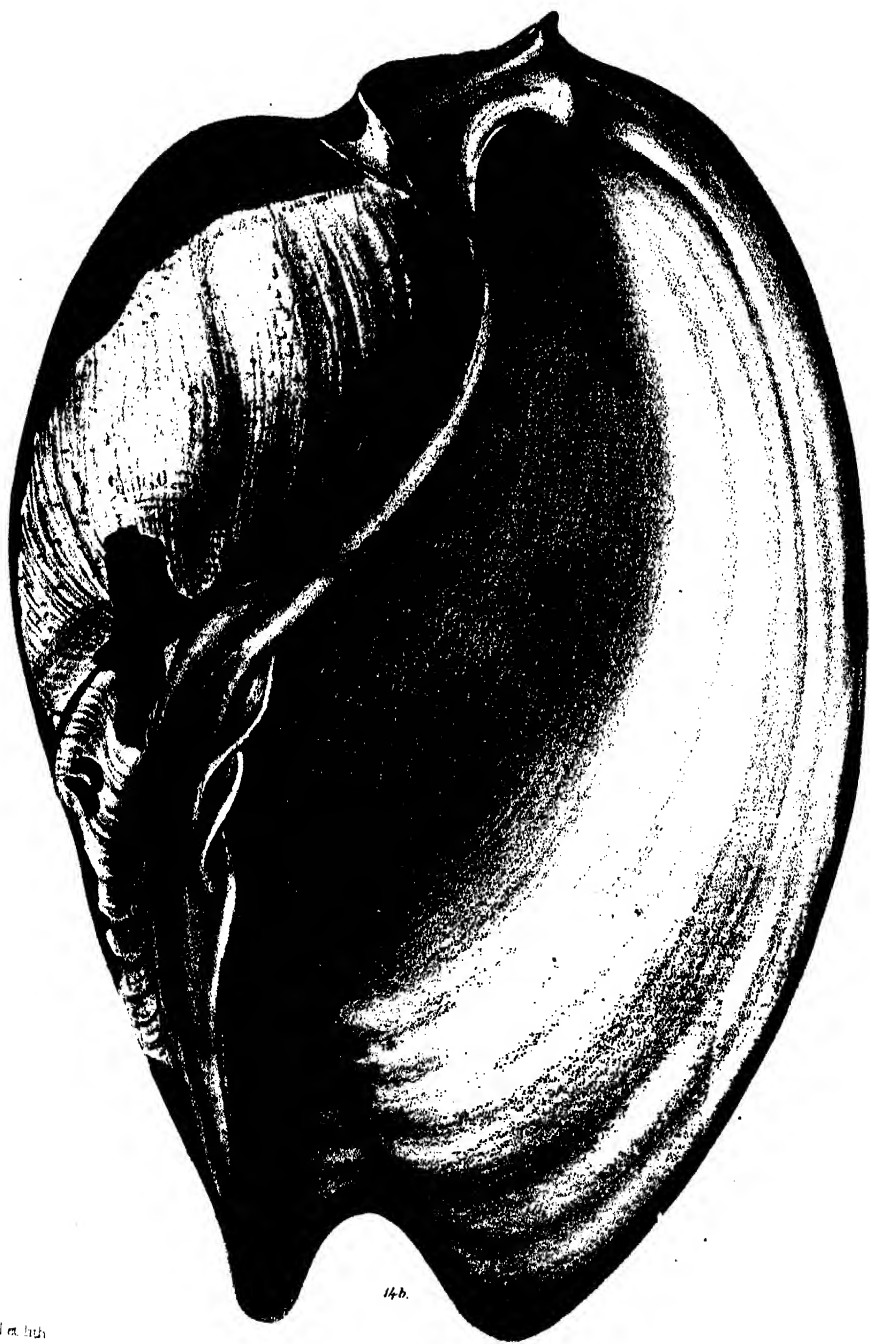
Cymbium olla, Lowe, fide Hanley.

Hab. West Africa.

Two species well distinguished by Gmelin, with the names *Folula Neptuni* and *Folula navicula*, were confounded together by Lamarek, and, excepting Dr. Gray, by all subsequent writers. *C. Neptuni*, the species under consideration, is an orange-fulvous shell, covered with a thick olive-black epidermis. *C. navicula* (for which see Pl. XXIV.) is of a white-mottled purple-red colour, with only a very slight epidermis. But a much more serious error has been committed by Mr. Hanley, and adopted by Mr. Lowe, in assigning these combined species to the *Folula olla* of Linnaeus. The result of my examination of this question will be found, under *Cymbium olla* at Pl. XXV. Dr. Gray considers Mr. Broderip's *Cymba patula* (for which see also Pl. XXV.) the young of *C. Neptuni*, but I have not been able to satisfy myself on this point.

February, 1861.





14b.

Sowerby, del. et. lith.

Vincent Brooks, Imp.

CYMBIUM.

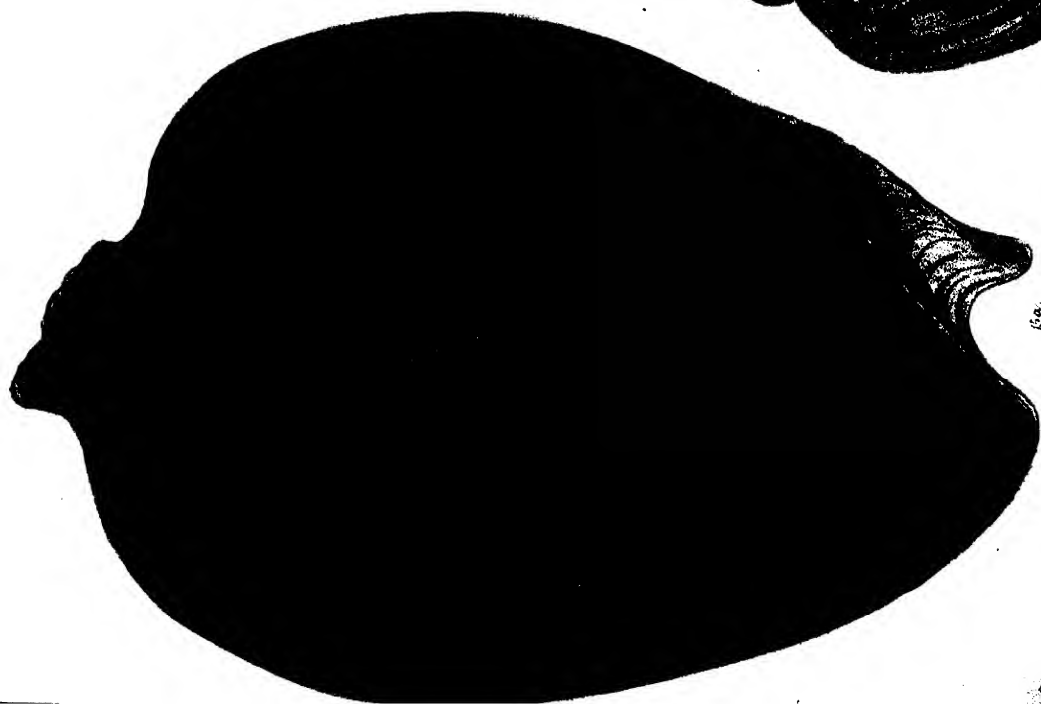
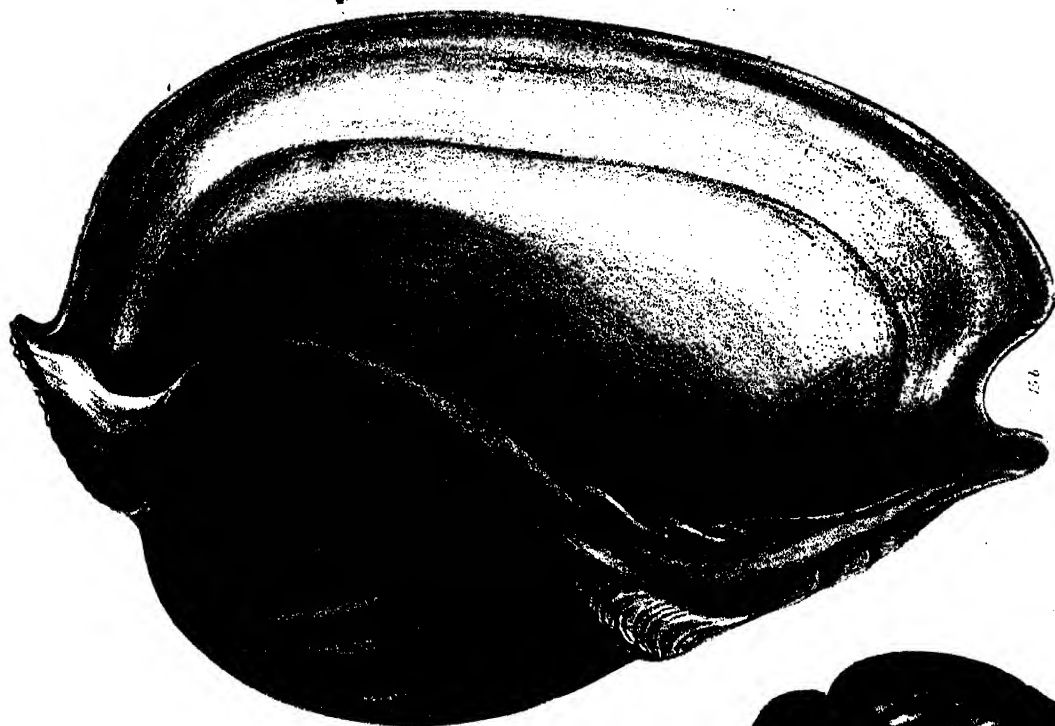
PLATE XXIII.

Species 14. (Mus. Cuming.)

In this front view of the specimen of *Cymbium Neptuni* figured in the preceding Plate, it may be observed that the spire and apex are wholly concealed by the over-coiling of the last whorl. This is not always the case. Sometimes the spire is a little exerted, and the last whorl, not reaching over it, forms a more or less excavated channel round the apex. This would naturally be the case in a specimen of more oblong form coiling upon a more lengthened

axis. The species in this state is Mr. Broderip's *Cymba Trilonis*. Dr. Gray, as I have already stated, unites Mr. Broderip's *C. patula* with *C. Neptuni*, considering it to be the young; but it will be seen on reference to our figure of *Cymbium patulum*, Plate XXV. Fig. 16 *a, b*, that the shell is more contracted towards the apex, and there is one plait less on the columella, neither of which characters are peculiar to *Cymbia* of immature growth.

March, 1861.



C Y M B I U M

PLATE XXIV.

Species 15. (Fig. *a, b, c*, Mus. Cuming.)

CYMBIUM NAVICULA. *Cymb. testā globoso-ovatā, inflatā, rufo-fuscă, maculis albidis plus minus marmoratā, spirā brevissimā, apice serè occulto, anfractibus supernè angustè contractis, margine producto, intus circa apicem excavato-caniculato; columellā triplicatā.*

THE BOAT CYMBIUM. Shell globosely ovate, inflated, red-brown, more or less marbled with white spots, spire very short, apex almost concealed, whorls narrowly contracted round the upper part, margin produced, excavately channelled round the apex; columella three-plaited.

Voluta navicula, Gmelin, Syst. Nat. p. 3467.

Cymbium Persicum-maculatum, Martini.

Voluta Pepo, Solander.

Cymba Neptuni, pars, Broderip.

Yetus navicula, Gray.

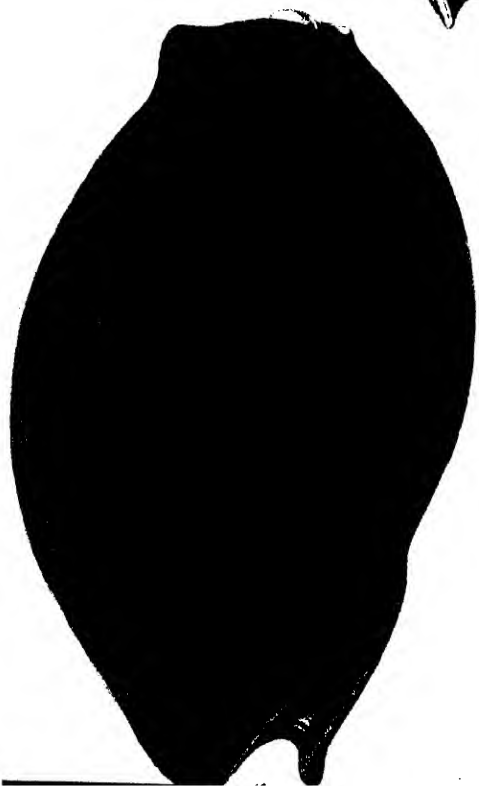
Hab. West Africa.

Martini was the first to recognize the distinction between this species and the preceding, but the irregularity of his nomenclature requires that a preference should be given to the name of Gmelin. The shell of *C. Neptuni* is of a uniform fulvous colour, covered with a thick, dark, fibrous epidermis, while that of *C. navicula* is of a characteristic red-brown mahogany-colour, mottled throughout, in all stages of growth, with whitish spots.

March, 1861.



17a.



16b.

CYMBIUM.

PLATE XXV.

Species 16. (Fig. a, b, Mus. Cuming.)

CYMBIUM PATULUM. *Cymb. testā ovatā, inflatā, utrinque subattenuatā, fulvescente-lacteā, epidermide tenuiculā fulvo-olivaceā indutā, spirā breviusculā, anfractibus supernè subangustè contractis, deinde ad marginem acutè productis, intus circa apicem canaliculatis; columellā buplicatā, ustulato-castaneo marginatā.*

THE WIDE-OPEN CYMBIUM. Shell ovate, inflated, a little attenuated at each end, fulvous cream-colour, covered with a rather thin fulvous-olive epidermis, spire somewhat short, whorls rather narrowly contracted round the upper part, then sharply produced at the margin, internally channelled round the aperture; columella two-plaited, edged with scorched-chestnut.

Cymba patula, Broderip, Spec. Conch. f. 4, 4 b.

Hab. West Africa.

Is this the young of *C. Neptuni*, or a distinct species? It is not uncommon. There are several specimens in the British Museum, and Dr. Gray fancies that they show a passage of growth into *C. Neptuni*. The evidence of their relationship is, however, by no means complete, and the columella of *C. patulum* is clearly only two-plaited.

Species 17. (Mus. Cuming.)

CYMBIUM OLLA. *Cymb. testā ovatā, latè inflatā, rugosā, rufescente-fulvā, ferrugineā, spirā breviusculā, apice conspicuo, anfractibus supernè obtusè rotundatis, margine incurvo, deinde circa apicem subprofundè canaliculatis; columellā tenuè restrictā, buplicatā.*

THE POT CYMBIUM. Shell ovate, broadly inflated, wrinkled, reddish-fulvous, rust-stained, spire rather short, apex conspicuous, whorls obtusely rounded at the upper part, with the margin incurved, then rather deeply channelled round the apex; columella thinly restricted, two-plaited.

Voluta olla, Linnæus, Syst. Nat. p. 1196.

Cymbium mamillare, Klein.

Cymbium Philippinum, Martini.

Voluta papillaris, Gmelin.

Cymbium papillatum, Schumacher.

Cymbium olla, Menke.

Cymba olla, Broderip.

Vetus olla, Gray.

Cymbium productum, Lowe.

Hab. Mediterranean.

It will be seen by the foregoing synonymy that authors have not always agreed either upon the natural habitat of this species, or upon the question of its identity with the *Voluta olla* of Linnæus; but this want of agreement is the result of error rather than of a difference of opinion. Martini named the shell as coming from the Philippine Islands, and Lamarck gives Indian Ocean as its native locality, but it is now well known that *C. olla* is a Lusitanian shell, belonging strictly to the western Mediterranean, on the shores of Spain. There is no evidence of its having been collected within the tropics.

The error of dissociating this shell from the Linnæan *Voluta olla*, and assigning *C. Neptuni* to that species, needs also to be removed. In a recent paper by the Rev. R. T. Lowe, on the shells of Mogador (Proc. Linn. Soc. 1860, p. 191), the author, relying upon an opinion of Mr. Hanley (Ips. Linn. Conch. p. 237) that this is not the *Voluta olla* of the 'Systema Naturæ,' has given it the new name of *Cymbium productum*. Mr. Hanley says:—"Assuredly the *Cymba olla* of authors cannot be termed the *Voluta olla* of Linnæus." Having carefully examined the evidences on both sides, I can confidently state that the only evidence of any value against this species being the Linnæan *V. olla* is that the columella is two-plaited, whereas it is described in the 'Systema' as being four-plaited. The evidence in favour of its being the Linnæan *Voluta olla* is as follows:—All the best figures referred to in the Linnæan synonymy, namely, those of Klein, Lister, Argenville, Adanson, and Gualtieri, represent unquestionably the species under consideration. The figure of Gualtieri is a particularly characteristic one, and in Linnæus's own copy of that work, in the library of the Linnæan Society, the name *Voluta olla* is written against that figure, in Linnæus's handwriting. In some specimens of *C. olla* there is a rudiment of a third columellar plait, and there is also a winding ridge of enamel, with almost the appearance of a fourth. In the specimen figured by Gualtieri these appear to be exaggerated, and may have suggested to Linnæus the notion of the species being four-plaited. Another circumstance in favour of this shell being the Linnæan *Voluta olla* is, that the only specimen among the Linnæan types in the possession of the Linnæan Society that can be referred to it is the species before us; and upon examining Linnæus's own working copy of the 'Systema Naturæ,' I find against *V. olla* the ink-score corresponding with that on the specimen, both in Linnæus's handwriting.

March, 1861.





17b.



18a.



18b



19c.

CYMBIUM.

PLATE XXVI.

Species 17. (Fig. *b, c*, Mus. Cuming.)

This shell represents *C. olla*, described and figured in the preceding Plate in an earlier stage of growth, showing little or no alteration of its characters. Externally it has the same wrinkled sculpture, and the columella is as distinctly two-plaited.

Species 18. (Fig. *a, b*, Mus. Brit.)

CYMBIUM RUBIGINOSUM. *Cymb. testā oblongo-ovatā, cylindraceā, solidiusculā, crassā, fulvo-cinereā vel rubiginosā, spirā breviusculā, interdum subproductā, anfractibus supernè oblusis, margine nunc angulato, nunc incurvo, circa spiram canaliculatis; columellā tripliatā.*

THE RUSTY CYMBIUM. Shell oblong-ovate, cylindrical, rather solid, thick, fulvous-ash or rust-colour, spire rather short, sometimes a little produced, whorls obtuse at the upper part, with the margin sometimes angled, sometimes incurved, channelled round the spire; columella three-plaited.

Voluta rubiginosa, Swainson, Exotic Conch. pl. 28.

Le Philin, Adanson.

Cymba rubiginosa, Broderip.

Yetus cymbium, pars, Gray.

Hab. North-west Africa.

The Rev. R. T. Lowe has given a full and most interesting account of this species in the notes to his 'List of Shells observed or collected at Mogador, during a few days' visit in April 1859.' (Pro. Linn. Soc. 1860, p. 169.) He considers *C. rubiginosum*, and not *C. porcinum* or *proboscule*, as Dr. Gray does, to be *Le Philin* of Adanson, and I quite concur in this view. Dr. Gray gives *C. rubiginosum* as a synonym of his *Yetus cymbium*, which is not the Linnæan *Voluta cymbium*, but *C. cisium*, Menke. A comparison of our figures in Plates XXV. and XXVI. will show, however, that it partakes more of the characters of *C. olla* and *patula*. Mr. Lowe collected two well-defined varieties, which he designates *α, angulata*, and *β, incurva*. In one the shoulder or upper edge of the whorls is angular, inclining outwardly, as in our figured specimen in the British Museum; in the other the edge inclines inwardly.

March, 1861.

C Y M B I U M.

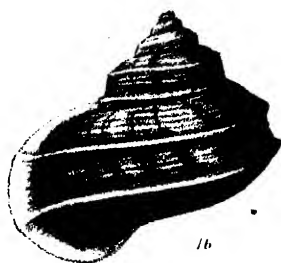
	Plate.	Species		Plate.	Species
<i>Æthiopicum (Voluta), Linnæus</i>	I.	1	<i>Nautica (Voluta), Linnæus</i> . . .	I.	1
<i>armata (Voluta), Lamarck</i> . . .	XIV.	7	<i>navicula (Voluta), Gmelin</i>	XXIV.	15
<i>Broderipii, Gray</i>	V.	3	<i>Neptuni (Voluta), Gmelin</i>	XXII.	14
<i>ceramicum, Petiver</i>	I.	1	<i>olla (Voluta), Linnæus</i>	XXV.	17
<i>cisium, Menke</i>	XXI.	13	<i>olla, Lowe, fide Hanley</i>	XXII.	14
<i>coronatum, Klein</i>	I.	1	<i>papillaris (Voluta), Gmelin</i> . . .	XXV.	17
<i>cylindratum (Melo), Broderip</i> . .	XVI.	8	<i>papillatum, Schumacher</i>	XXV.	17
<i>cymbium (Voluta), Lamarck</i> . .	XXI.	13	<i>patulum (Cymba), Broderip</i> . . .	XXV.	16
<i>cymbium (Voluta), Linnæus</i> . .	XIX.	11	<i>Pepo (Voluta), Solander</i>	XXIV.	15
<i>diadema (Voluta), Lamarck</i> . . .	XIV.	7	<i>Persicum maculatum, Martini</i> . .	XXIV.	15
<i>ducale (Voluta), Lamarck</i>	VII.	4	<i>Philippinum, Martini</i>	XXV.	17
<i>excavatum, Martini</i>	XXI.	13	<i>productum, Lowe</i>	XXV.	17
<i>Georginæ, Gray</i>	XI.	6	<i>porcinum (Voluta), Lamarck</i> . .	XX.	12
<i>gracilis (Cymba), Broderip</i> . . .	XXI.	13	<i>proboscideale (Voluta), Lamarck</i>	XIX.	11
<i>Indicum (Voluta), Gmelin</i> . . .	XVII.	9	<i>regium (Voluta), Schubert</i> . . .	III.	2
<i>mamillare, Klein</i>	XXV.	17	<i>rubiginosum (Voluta), Swainson</i>	XXVI.	18
<i>melo, Menke</i>	XVII.	9	<i>tessellatum (Voluta), Lamarck</i> .	XVIII.	10
<i>Miltonis, Gray</i>	XVI.	8	<i>Tritonis (Cymba), Broderip</i> . . .	XXII.	14
<i>mucronatus (Melo), Sowerby</i> . .	XI.	6	<i>umbilicatus (Melo), Broderip</i> . .	VII.	4

MONOGRAPH
OF THE GENUS
C Y C L O S T O M A .

“ See here, my child, how fresh the colours ~~look~~,
How fast they hold, like colours of a shell.”

Tennyson.





CYCLOSTOMA.

PLATE I.

Genus CYCLOSTOMA, Lamarck.

Testa globoso-turbinata vel conica vel cylindraceo-oblonga, varie umbilicata, nunc lævigata, nunc dense scabroso-decussata, anfractibus plerumque rotundatis; aperturâ circulari vel pyriformi-circulari, labro reflexo, raro simplici, interdum fimbriato. Operculum circulare vel subcirculare, calcareum, spirale, anfractibus interdum lamellatis, nucleo excentrico.

Shell globosely turbinated or conical, or cylindrically oblong, variously umbilicated, sometimes smooth, sometimes densely scabrously decussated, whorls generally rounded; aperture circular or pyriformly circular, lip reflected, rarely simple, sometimes frilled. Operculum circular or nearly circular, calcareous, spiral, whorls sometimes lamellated, nucleus excentric.

The necessities of this work oblige me frequently to associate several excellent genera under one head, and I shall have to group many of the genera of the great family of *Cyclostomacea* in this manner. Under the old generic appellation of *Cyclostoma* I include the species arranged by Pfeiffer under *Cyclostomus*, *Otopoma*, *Choanopoma* and *Lithidion*, all distinguished by having a spiral shelly operculum, of which the whorls are, in *Choanopoma*, curiously raised in lamellæ. The geographical range of these groups, so far as regards the typical forms, are singularly local. Nearly all the globosely turbinated forms of *Cyclostomus* and *Otopoma* are either from Madagascar or the neighbouring islands; two or three are from Natal and Zanzibar. But in the same group with these are some species of a quite distinct type inhabiting Europe and the Canary Islands, and several partaking of the very characteristic *Choanopoma* form which is peculiar to the West Indies, chiefly Jamaica and Cuba. The species of the little *Lithidion* group inhabit Arabia and the island of Socotra. The Madagascar species have scarcely any sculpture, and little variation of colour. The predominant tone of painting is a yellowish drab, encircled about the periphery with a purple band. In *Choanopoma* the species are most elaborately sculptured with densely decussating scabrous lamellæ, and the lip is generally broadly flatly frilled.

Species 1. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA BICARINATUM. *Cycl. testâ globoso-turbinatâ, fusco-cæsiâ, spirâ subacutè conicâ, anfractibus*

undique obtusè latis, medio remotè bicarinatis; aperturâ circulari, fauce intense atro-sanguineâ, labro latè plano-dilatato, umbilicum interdum claudente.

THE TWO-BANDED CYCLOSTOMA. Shell globosely turbinated, brown-grey, spire rather sharply conical, whorls everywhere obtusely ridged, encircled round the middle with two distinct keels; aperture circular, interior black-blood-colour, lip broadly flatly dilated, sometimes closing the umbilicus.

SOWERBY, *Thesaurus Conch.* p. 120, pl. 26. f. 121.

Tropidophora bicarinata, Pfeiffer.

Hab. Madagascar.

It will be seen by a comparison of the figures 1 a and 1 c of this well-known species, that the umbilicus is sometimes closed and sometimes widely open; and that the lip, while generally partaking of the dark blood-colour of the interior, is occasionally white.

Species 2. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA MULTIFASCIATUM. *Cycl. testâ globoso-turbinatâ, cæsiâ, plus minus obscure purpureo-fusciatâ, spirâ acutè conicâ, anfractibus subangustè rotundatis, lævibus, ultimo circa umbilicum latis; aperturâ circulari, fauce atro-purpureâ, labro latè dilatato, flavescente.*

THE MANY-BANDED CYCLOSTOMA. Shell globosely turbinated, grey, more or less obscurely purple-banded, spire sharply conical, whorls rather narrowly rounded, smooth, the last ridged around the umbilicus; aperture circular, interior black-purple, lip broadly dilated, yellowish.

GRATELOUP, *Act. Soc. Linn. Bordeaux*, vol. 11. p. 436, pl. 3. f. 3.

Hab. Madagascar.

In the earlier whorls of this species there is an exceedingly faint indication of two distinct thread-like keels, which quickly become altogether obsolete.

Species 3. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA EUCHILUM. *Cycl. testâ globoso-turbinatâ, solidâ, fusco-cæsiâ, spirâ subabbreviato-conicâ, anfractibus angustè rotundatis, lævibus, spiraliter linearimpressis, ultimo circa umbilicum latis; aperturâ*

circulari, fauce atro-fuscescente, labro albo, crassè reflexo, callosa-ascendente.

THE LARGE-LIPPED CYCLOSTOMA. Shell globosely turbinated, rather solid, brown-grey, spire rather shortly conical, whorls narrowly rounded, smooth, spirally linearly impressed, last whorl ridged around the umbilicus: aperture circular, interior tinged with black-brown, lip white, thickly reflected, callously ascending.

PFEIFFER, Pro. Zool. Soc. 1851, p. 242.

Hab. Madagascar.

Distinguished by a remarkable broadly-reflected thickening of the lip, which rises at its junction with the body whorl like a callous varix.

Species 4. (Fig. *a, b*, Mus. Cuning.)

CYCLOSTOMA MADAGASCARIENSE. *Cycl. testâ globosoturbinatâ, solidiusculâ, caesiâ, medio purpureo lineari-fasciatâ, spirâ conicâ, anfractibus subangustè rotundatis, ad peripheriam obsolètè carinatis, levibus, ultimo circa umbilicum tirato: aperturâ circulari, intus atro-fusca, labro latissimè expanso, conspicuè ascendente, croceo.*

THE MADAGASCAR CYCLOSTOMA. Shell globosely turbinated, rather solid, grey, linearly banded with purple about the middle, spire conical, whorls rather narrowly rounded, obsolete keeled at the periphery, smooth, last whorl ridged around the umbilicus;

aperture circular, black-brown within, lip very broadly expanded, conspicuously ascending, saffron-coloured. (GRAY, Griffith's Univ. Anim. King. pl. 28. f. 4.

Cyclostoma Duisohenis, Grateloup.

Hab. Madagascar.

It is extremely doubtful whether this and *C. multifasciatum* are not varieties of the same species.

cies 5. (Mus. Cuning.)

CYCLOSTOMA CAMPANULATUM. *Cycl. testâ depressè turbinatâ, caesiâ, fusco lineatâ, infra peripheriam lineari-fasciatâ, anfractibus angustè rotundatis, undique spiritaliter tenuè latis, medio acutissimè unicarinatis: aperturâ circulari, fauce atro-fusca, labro latè expanso, rivicè sanguineo.*

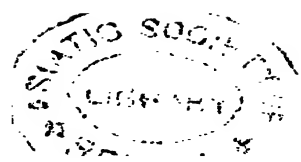
THE BELL-SHAPED CYCLOSTOMA. Shell depressly turbinated, grey, tinged with brown, linearly banded beneath the periphery, whorls narrowly rounded, spirally finely ridged throughout, very sharply keeled round the middle; aperture circular, black-brown within, lip broadly expanded, bright blood-coloured.

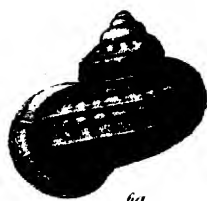
PFEIFFER, Zeitschrift für Malac. 1847, p. 57.

Cyclostoma unicarinatum, Sowerby.

Hab. — ?

This approaches very nearly to *C. bicarinatum*; it is more depressly turbinated and has a narrower periphery. The umbilicus appears to vary.





6a



7b



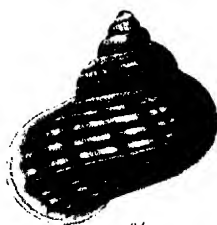
8a



9b



9a



8b



10a



10b



6b

CYCLOSTOMA.

PLATE II.

Species 6. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA PULCHELLUM. *Cycl. testâ globoso-turbinatâ, tenuiculâ, lutescente, carneo-fusco fasciatim maculatâ, spirâ aculè conicâ, anfractibus spirâliter confertissimè lineari-impressis, medio remotè bicarinatis, circa umbilicum densè carino-liratis; aperturâ parviusculâ, subcirculari, fauce fuscescente, labro plano-expanso, sanguineo.*

THE PRETTY CYCLOSTOMA. Shell globosely turbinated, rather thin, yellowish, spotted in a banded manner with flesh-brown, spire sharply conical, whorls spirally very closely linearly impressed, distantly two-keeled round the middle, densely keel-ridged around the umbilicus; aperture rather small, nearly circular, interior brownish, lip flatly expanded, blood-stained.

SOWERBY, Thesaurus Conch. p. 129. pl. 31. f. 263, 264.

Tropidophora pulchella, Gray.

Cyclostoma Hanleyi, Pfeiffer.

Tropidophora Hanleyi, Gray.

Hab. —?

Elegantly characterized by a painting of necklace bands of square flesh-brown spots.

Species 7. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA BARCLAYANUM. *Testâ parum umbilicatâ, conico-turbinatâ, solidiusculâ, purpureo-fuscâ, anfractibus declivi-tumidis, multicarinatis, carinis subdistantibus, ultimo circa umbilicum angulato-excavato et carinato; aperturâ parviusculâ, labro subcalloso, albo, parum reflexo.*

BARCLAY'S CYCLOSTOMA. Shell but little umbilicated, conically turbinated, rather solid, purple brown, whorls slopingly tumid, many-keeled, keels rather distant, last whorl angularly excavated and keeled around the umbilicus; aperture rather small, lip somewhat callous, but little reflected.

PFEIFFER, Pro. Zool. Soc. 1852, p. 158.

Hab. Mauritius; Sir D. Barclay.

This and *C. Michaudi* represent a very distinct form of the genus, in which the whorls are more slopingly tumid, the last being peculiarly excavated around the umbilicus.

Species 8. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA BELAIRI. *Cycl. testâ parum umbilicatâ, globoso-turbinatâ, violaceo-albidâ, purpureo undique conspicuè fasciatâ, spirâ elevatâ, anfractibus convexis, obsolete lineari-impressis; aperturâ obliquè circulari, labro anticè dilatato, pallido, posticè tenuè reflexo, roseo, super umbilicum latè appresso.*

BELAIR'S CYCLOSTOMA. Shell but little umbilicated, globosely turbinated, whitish, conspicuously banded with violet-purple, spire elevated, whorls convex, obsolete linearly impressed; aperture obliquely circular, lip anteriorly dilated, pale, posteriorly thinly reflected, rose, broadly appressed over the umbilicus.

PETIT, Journ. Conch. 1853, p. 360. pl. 11. f. 2.

Hab. Madagascar; Belair.

The lip of this species is peculiar; while in front it is dilated and pale, next the umbilicus it is rose-tinted, thinly reflected, then broadly appressed.

Species 9. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA BOIVINI. *Cycl. testâ oblectè umbilicatâ, globoso-turbinatâ, censiâ, purpureo-fusco lineatâ et fasciatâ, spirâ aculè conicâ, anfractibus convexis, decussatim impresso-striatis, ultimo ad peripheriam obsolete unicarinato, circa umbilicum lirato; aperturâ circulari, fauce atro-fuscâ, labro anticè latè dilatato, posticè tenuè reflexo, super umbilicum latè calloso-appresso.*

BOIVIN'S CYCLOSTOMA. Shell with the umbilicus covered, globosely turbinated, grey, lineated and banded with purple-brown, spire sharply conical, whorls convex, decussately impressly striated, last whorl obsolete keeled at the periphery, ridged around the umbilicus; aperture circular, interior black-brown, lip broadly dilated in front, posteriorly thinly reflected, broadly callously appressed over the umbilicus.

Hab. Madagascar.

The last whorl of this species has a well-defined, though nearly obsolete keel, and there is a faint indication of a second keel.

Species 10. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA MICHAUDI. *Cycl. testâ oblectè umbilicatâ,*

conico-turbinatâ, solidâ, sordidè purpureo-fuscâ, spirâ brevi, anfractibus declivi-tumidis, multicarinatis, carinis duabus distantibus prominentioribus, anfractu ultimo infra peripheriam subangulato, circa umbilicum excavato; aperturâ obliquè circulari, parviusculâ, labro crassè subreflexo, vividè sanguineo.

MICHAUD'S CYCLOSTOMA. Shell with the umbilicus covered, conically turbinated, solid, dull purple-brown, spire short, whorls slopingly tumid, many-keeled, two of the keels distant from each other, more prominent than the rest, last whorl slightly angled below the periphery, excavated around the

umbilicus; aperture obliquely circular, rather small, lip thickly moderately reflected, deep blood-red.

GRATELOUP, Act. Soc. Linn. Bordeaux, vol. ii. p. 440, pl. 3. f. 11.

Tropidophora Michaudi, Pfeiffer.

Otopoma Michaudi, Gray.

Hab. Madagascar.

A solid conically tumid species, densely keeled throughout, the keel of the periphery being conspicuously more prominent than the rest, and giving an angular base to the shell.



CYCLOSTOMA.

PLATE III.

Species 11. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA RUGOSUM. *Cycl. testā globoso-turbinatā, solidiusculā, carneo-griseā, fasciā angustā rufo-fusca infra peripheriam, anfractibus convexis, supernè subprofusè carino-liratis, infernè impresso-striatis, ultimo circa umbilicū angulato-excavato et validè carino-lirato; aperturā circulari, parvisculā, labro parum reflexo.*

THE ROUGH CYCLOSTOMA. Shell globosely turbinated, rather solid, flesh-grey, with a narrow red-brown band beneath the periphery, whorls convex, rather profusely keel-ridged round the upper part, impressly striated round the lower, last whorl angularly excavated and strongly keel-ridged around the umbilicus; aperture circular, rather small, lip reflected.

LAMARCK, Anim. sans vert. vol. viii. p. 356.

Hab. — ?

Well characterized by its angularly excavated keel-ridged umbilicus.

Fig. 12. (Fig. *a, b*, Mus. Cuming.)

The shell here figured is the type of Mr. Sowerby's *C. Harveyanum*, which proves to be a pale variety of *C. asperum*, Potiez and Michaud, Species 15.

Species 13. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA CALCAREUM. *Cycl. testā globoso-conicā, solidā, calcareo-albā, anfractibus rotundatis, undique spiraliter liratis, liris regularibus, alternatim validioribus; aperturā circulari, labro subreflexo.*

THE CHALK CYCLOSTOMA. Shell globosely conical, solid, chalk-white, whorls rounded, spirally ridged throughout, ridges regular, alternately stronger; aperture circular, lip slightly reflected.

SOWERBY, Thes. Conch. p. 118. pl. 26. f. 113.

Cyclostoma sulcatum, Lamarck (not of Draparnaud).

Tropidophora calcarea, Gray.

Hab. — ?

This species appears to be naturally of a dead chalk-white substance, elegantly sculptured throughout with neat alternately enlarged ridges.

Species 14. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA APLUSTRE. *Cycl. testā subampliter umbilicatā, globoso-turbinatā, depressiusculā, tenui, carneo-albidā, violaceo-fusco supra peripheriam fasciatā, anfractibus juxta suturas subplanatis, deinde rotundatis, undique minutè reticulato-decussatis; aperturā circulari, parvisculā, labro parum reflexo.*

THE FLAG CYCLOSTOMA. Shell rather largely umbilicated, globosely turbinated, rather depressed, thin, flesh-white, profusely banded above the periphery with violet-brown; whorls rather flat next the sutures, then rounded, everywhere minutely reticulately decussated.

SOWERBY, Proc. Zool. Soc. 1849, p. 15. pl. 2. f. 4, 5.

Tropidophora aplustris, Gray.

Hab. Madagascar.

A delicately painted shell of light structure, with a deep perspective umbilicus.

Species 15. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA ASPERUM. *Cycl. testā modicè umbilicatā, globoso-turbinatā, carneo-griseā, ferrugineo-lividā, fasciā purpureo-castaneā infra peripheriam; anfractibus rotundatis, undique conspicuè liratis, interstitiis scabroso-striatis; aperturā obliquè circulari, fauce purpureo-ferrugineā, labro reflexo, marginibus posticè subascendentibus.*

THE ROUGH CYCLOSTOMA. Shell moderately umbilicated, globosely turbinated, flesh-grey, tinged with rust, with a purple-chestnut band below the periphery; whorls rounded, conspicuously ridged throughout, interstices scabrously striated; aperture obliquely circular, interior purple-rust, lip reflected, margins a little ascending posteriorly.

POTIEZ and MICHAUD, Gal. Douai, vol. i. p. 233. pl. 23. f. 15, 16.

Cyclostoma Harveyanum, Sowerby.

Tropidophora aspera, Gray.

Hab. Madagascar.

The transverse striae are often so strong in this species as to give a scabrous character to the interstices between the ridges.



16a



17a



17b



18a



19b



20a



20b



16b

CYCLOSTOMA.

PLATE IV.

Species 16. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA PRINCIPALE. *Cycl. testâ modicè umbilicatâ, globoso-turbinatâ, nitente-albâ, rufo-castaneo conspicuè bifusciatâ, anfractibus juxta suturas subplanulatis, deinde rotundatis, undique carinatis; aperturâ sub-obliquè circulari, labro reflexo.*

THE PRINCELY CYCLOSTOMA. Shell moderately umbilicated, globosely turbinated, shining white, encircled with two conspicuous red-brown bands; whorls rather flattened next the sutures, then rounded, keeled throughout; aperture rather obliquely circular, lip reflected.

PREIFFER, Pro. Zool. Soc. 1859, p. 27. pl. 44. f. 7.

Hab. Madagascar.

The two bands of this species are situated one on the periphery and the other below it. The succession of keels with which the shell is sculptured throughout forms a very prominent character.

Species 17. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA FULVESCENS. *Cycl. testâ modicè umbilicatâ, globoso-turbinatâ, fulvescente-fusciâ, anfractibus rotundatis, liris linearibus undique densè spiraliter sculptis; aperturâ obliquè circulari, fauce rufo-castaneâ, labro tenuè reflexo, albo, marginibus posticè subascendentibus.*

THE FULVOUS CYCLOSTOMA. Shell moderately umbilicated, globosely turbinated, fulvous-brown; whorls rounded, everywhere densely spirally sculptured with linear ridges; aperture obliquely circular, interior rufous-chestnut, lip thinly reflected, white, margins slightly ascending posteriorly.

SOWERBY, Pro. Zool. Soc. 1843, p. 63.

Hab. Madagascar.

In this species the spiral ridges are closer and more thread-like than in the allied species, and the shell is not banded.

Species 18. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA OBSOLETUM. *Cycl. testâ modicè umbilicatâ, globoso-turbinatâ, livido-cæsiâ, fasciis irregularibus purpureo-fuscis cingulatâ, anfractibus supernè declivi-*

planis, deinde rotundatis, levibus, obscurè malleatis, ad suturas minutè plicatis, ultimo circa umbilicam lirato; aperturâ circulari, fauce purpureo-fusco tinctâ, labro tenuè reflexo.

THE OBSOLETE CYCLOSTOMA. Shell moderately umbilicated, globosely turbinated, livid-grey, encircled with irregular livid-purple bands; whorls slopingly flattened round the upper part, then rounded, smooth, obscurely malleated, puckered at the sutures, last whorl ridged around the umbilicus; aperture circular, interior stained with purple-brown, lip thinly reflected, white.

LAMARCK, Anim. sans vert. vol. viii. p. 355.

Hab. Madagascar.

The deep purple bands of this species are obscured and rendered more or less obsolete by an overlying milky-white deposit.

Species 19. (Fig. *a, b, c, d*, Mus. Cuming.)

CYCLOSTOMA VITTATUM. *Cycl. testâ ampliter patente-umbilicatâ, depressâ, subdiscoidâ, purpurascens-albâ, violaceo-purpureo undique spiraliter vittatâ, anfractibus angustis, supra planulatis, deinde rotundatis, undique lirato-striatis et malleatis; aperturâ obliquè circulari, fauce purpureo-castaneâ, labro modicè reflexo, marginibus posticè ratoso-ascendentibus.*

THE RIBAND-BOUND CYCLOSTOMA. Shell largely openly umbilicated, depressed, subdiscoid, purplish-white, everywhere spirally banded with violet-purple; whorls narrow, flat above, then rounded, ridge-striated and malleated throughout; aperture obliquely circular, interior purple chestnut, lip moderately reflected, margins posteriorly callously ascending.

SOWERBY, Species Conch. f. 91-94.

Hab. Madagascar.

A neatly banded species, of a more depressed discoidal form than usual, having a particularly open umbilicus.

Species 20. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA MOULINSII. *Cycl. testâ subampliter umbilicatâ, depressâ, albâ, ferrugineo-purpureo tinctâ, et spiraliter lineatâ et unifusciatâ, anfractibus subangus-*

lis, juxta suturas planulatis et obsolete canaliculatis, deinde rotundatis, undique spiraliter elevato-striatis: aperturâ obliquè circulari, intus purpurascente, labro vix reflexo, marginibus posticè calloso-ascendentibus.

MOULINS' CYCLOSTOMA. Shell rather largely umbilicated, depressed, whitish, stained and spirally lineated and banded with rust-purple; whorls rather narrow, flat and obsolete channelled next the suture, then rounded, everywhere spirally elevately striated; aperture obliquely circular, purplish within,

lip scarcely reflected, margins callously ascending posteriorly.

GRATELOUP, Act. Soc. Linn. Bordeaux, vol. ii. p. 444. pl. 3. f. 19.

Cyclostoma Desmoulinsii, Sowerby.

Hab. Madagascar.

Of a rather less discoid form than the preceding, though much depressed, while the umbilicus is not so largely open.





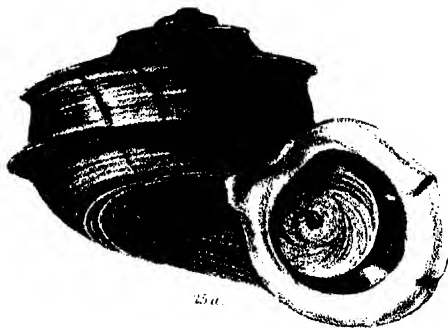
21a



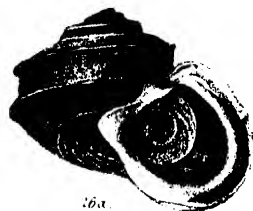
22a



22b



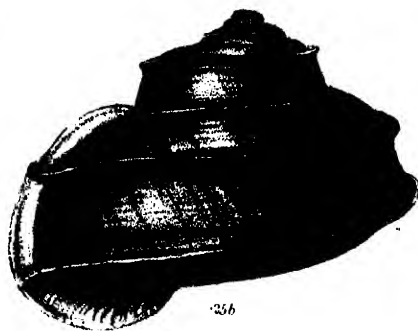
23a



26a



26b



25b



27a



27b



23b

CYCLOSTOMA.

PLATE V.

Species 23. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA CARINATUM. *Cycl. testā excavato-umbilicatā, depresso-globosā, fulvescente-albā, subopacā, rufescente tinctā et obscurē fasciatā, anfractibus superne spiraliter tenuilatis, juxta suturas undatis, deinde tricarinatis, carinis prominentibus, acutis, distantibus, interstitiis lævibus, concaviusculis, anfractu ultimo circa umbilicum validē excavato-lirato; aperturā subcirculari, labro modicē reflexo, ad carinas lacunato, marginibus junctis.*

THE KEELED CYCLOSTOMA. Shell excavately umbilicated, depressly globose, fulvous-white, rather opaque, stained and obscurely banded with reddish-brown, whorls spirally finely ridged round the upper part, puckered next the sutures, then three-keeled, keels prominent, sharp, distant, interstices smooth, rather concave, last whorl strongly excavately ridged around the umbilicus; aperture nearly circular, lip moderately reflected, guttered at the keels, margins joined.

Turbo carinatus, Born, Test. Mus. Vind. p. 353. pl. 13. f. 3, 4.

Cyclostoma carinatum, Lamarek (not of Sowerby).

Cyclostoma tricarinatum, Sowerby.

Tropidophora carinata, Pfeiffer.

Hab. Madagascar?

The habitat of this species has not hitherto been given, but I have a specimen before me from the collection of Mr. Hamilton, found in damp clay in a semifossil subdecomposed state by his son, Lieutenant Hamilton, R.E., in a cave three miles from the sea, near St. Flacq, Mauritius, which there is every reason to believe had been conveyed thither from Madagascar.

Species 24. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA DESHAYESIANUM. *Cycl. testā subampliter perspective umbilicatā, depressē orbiculari, crassiusculā, fulvescente-carnēā, versus apicem rosaceā, anfractibus angustis, ad suturas planulatis, deinde rotundatis, ad peripheriam acutissimē carinatis, supra carino-liratis, liris duplicibus, infra densē regulariter striato-liratis; aperturā parvā, labro crassē reflexo-fimbriato, fimbriā posticē calloso-ascendente.*

DESHAYES' CYCLOSTOMA. Shell rather largely perspective umbilicated, depressly orbicular, rather thick

fulvous flesh-colour, tinged with rose towards the apex, whorls narrow, flattened next the suture, then rounded, very sharply keeled at the periphery, keel-ridged above, the ridges being duplex, densely regularly striately ridged below; aperture small, lip thickly reflectedly frilled, frill callously ascending posteriorly.

PETIT, Revue Zool. Cuv. Soc. 1844, p. 3.

Hab. North Madagascar.

An exquisitely sculptured species from North Madagascar, partaking of the typical characteristics so beautifully developed in the following species from the adjacent islands.

Species 25. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA CUVIERIANUM. *Cycl. testā ampliter perspective umbilicatā, depressē orbiculari, livido-fulvescente, ferrugineo tinctā, anfractibus plano-declivibus deinde acutē laminato-bicarinatis, undique subtiliter decussatim striatis, ultimo circa umbilicum lirato; aperturā subcirculari, labro subampliter reflexo-fimbriato, ad carinas lacunato, marginibus posticē calloso-ascendentibus.*

CUVIER'S CYCLOSTOMA. Shell largely perspective umbilicated, depressly orbicular, livid-fulvous, tinged with rust, whorls flatly sloping, then sharply laminately two-keeled, everywhere finely decussately striated, last whorl ridged around the umbilicus; aperture nearly circular, lip rather largely reflectedly frilled, guttered at the keels, margins callously ascending posteriorly.

PETIT, Revue Zool. Soc. Cuv. 1841, p. 184; Mag. de Zool. pl. 55.

Tropidophora Cuvieriana, Troschel.

Hab. Seychelle Islands.

This magnificent species differs, it will be seen, in its typical structure from the old *C. carinatum* in being convexly, not concavely, excavated at the umbilicus.

Species 26. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA OCCLUSUM. *Cycl. testā oblectē umbilicatā, depressē orbiculari, livido-fulvescente, ferrugineo tinctā,*

anfractibus plano-declivibus, deinde acutè laminato-bicarinatis, undique subtiliter decussatim striatis, ultimo circa umbilicum tenuilato; aperturâ subcirculari, labro crassè reflexo-fimbriato, marginibus posticè calloso-appressis.

THE CLOSED CYCLOSTOMA. Shell, with a covered umbilicus, depressly orbicular, livid-fulvous, tinged with rust, whorls flatly sloping, then sharply laminately two-keeled, everywhere finely decussately striated, last whorl delicately ridged around the umbilicus; aperture nearly circular, lip thickly reflectedly frilled, margins callously appressed posteriorly.

MORCH, Cat. Yold. p. 39.

Hab. Madagascar.

There is some doubt of this being a dwarf state of the preceding species, with the umbilicus contracted and closed over by the callous thickening of the reflected lip, as in *C. picarinatum* and others.

Species 27. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA VIRGO. *Cycl. testâ modicè umbilicatâ, subglobo-turbinatâ, tenui, semipellucidâ, fulvescente-albâ, fasciis duabus subdistantibus rufo-fuscis cingulatâ, anfractibus declivi-convexis, undique pulcherrimè decussatim scabroso-striatis; aperturâ obliquè circulari, labro expanso-reflexo, super umbilicum latè laminato-appresso.*

THE VIRGIN CYCLOSTOMA. Shell moderately umbilicated, somewhat globosely turbinated, thin, semitransparent, fulvous-white, encircled with two rather distant red-brown bands, whorls slopingly convex, everywhere very beautifully decussately scabrously striated; aperture obliquely circular, lip expandedly reflected, broadly laminately appressed over the umbilicus.

PFEIFFER, Pro. Zool. Soc. 1854, p. 150.

Hab. Madagascar.

A shell of delicate semitransparent substance, exquisitely minutely sculptured throughout with a decussation of scabrous striæ.





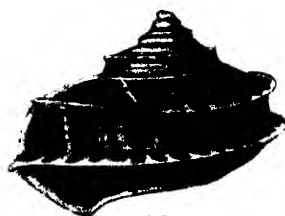
29 b



30 a.



31 a.



31 b



30 b



32 a



32 b



33

CYCLOSTOMA.

PLATE VI.

Species 28. (Mus. Cuming.)

CYCLOSTOMA LIRATUM. *Cycl. testā patentē perspectivē umbilicatā, depressā, subdiscoideā, livido-fuscescente, anfractibus angustis, ad suturas impressis, deinde rotundatis, liris tenuibus acutis æquidistantibus undique cingulatis; aperturā parvā, labro dilatato-fimbriato, rufescente.*

THE RIDGED CYCLOSTOMA. Shell openly perspective-ly umbilicated, depressed, nearly discoid, livid-brown, whorls narrow, impressed at the sutures, then rounded, encircled throughout with thin sharp equidistant ridges; aperture small, lip dilately frilled, reddish.

PFLEIFFER, Pro. Zool. Soc. 1852, p. 64.

Hab. — ?

Closely allied to *C. Deshayesianum*, and doubtless from the same locality. The spiral ridges which characterize it are remarkable for their extremely delicate thread-like aspect.

Species 29. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA ARTICULATUM. *Cycl. testā profundē umbilicatā, depressē orbiculari, solidiusculā, violascentē albā, tenuis violaceo-articulatis hic illic cingulatā, anfractibus spirāliter densē obtusē liris et carinatis; aperturā parviusculā, labro parum reflexo.*

THE ARTICULATED CYCLOSTOMA. Shell deeply umbilicated, depressly orbicular, rather solid, violet-white, encircled here and there with violet-articulated fillets, whorls spirally densely obtusely ridged and keeled; aperture rather small, lip but little reflected.

GRAY, in Griffith's Cav. Anim. King. pl. 28. f. 1.

Cyclostoma filiosum, Sowerby.

Cyclostoma Terverianum, Grateloup.

Hab. Rodriguez.

Of rather solid growth, tinged and filleted throughout with pale violet. Mr. Woodward gives an interesting account of some living specimens of this species, collected in 1858 by Madame Ida Pfeiffer in Rodriguez, to which island it is believed to be peculiar. Numerous examples were conveyed to the Mauritius, where they continued active, but took no food during two months. "Three individuals," continues Mr. Woodward (Pro. Zool. Soc. 1859, p. 204), "remained alive after the voyage to England, which occupied ten weeks, and several others were suffi-

ciently preserved for examination. They were brought over packed in paper and rags, in a tin pot with a lid, and were not taken out till a fortnight after their arrival. One of these snails lived for some months under a bell-glass, with moss and ferns, and afforded frequent opportunities for examination. The animal was of a pale buff colour, with darker tentacles and muzzle; the tentacles were acute, rugose, and slightly annulated, the muzzle annulated, grooved beneath, and bilobed at the end, which was constantly used in walking. The foot was ample, with a deep central groove dividing it into two lateral elements, moved alternately in walking. When it retired and closed its shell, it still adhered, and sometimes became suspended by a tenacious thread of mucus."

Species 30. (Fig. a, b, Mus. de Burgh.)

CYCLOSTOMA DE-BURGHIAN. *Cycl. testā patentissimē excavato-umbilicatā, plano-orbiculari, fumeo-griseā, maculis parvis fulvis et albis ad carinas et suturas articulata, spirā depressissimā, anfractibus undique decussatim striatis, supernē declivi-planis, deinde acutē renuētē tricarinatis, carinā medianā nullo prominentiore; aperturā subcirculari, faucē purpureo-fuscā, labro calloso-reflexo, intensē sanguineo.*

DE BURGH'S CYCLOSTOMA. Shell very openly excavately umbilicated, flatly orbicular, smoky-grey, articulated at the keels and sutures with small fulvous and white spots; spire very depressed, whorls everywhere decussately striated, slopingly flattened at the upper part, then sharply distantly three-keeled, the middle keel being much the more prominent; aperture nearly circular, interior purple-brown, lip callously reflected, deep blood-colour.

Hab. Madagascar.

This very beautiful species, from the collection of Mrs. de Burgh, was procured in Madagascar by the renowned traveller, Madame Ida Pfeiffer. It comes very near to *C. formosum* in the details of sculpture and colour, but the spire is flatly immersed, and the upper of the two encircling keels is almost obsolete. The lip is of an unusually deep blood-red colour. Mrs. de Burgh possesses two specimens exactly alike in these particulars.

Species 31. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA FORMOSUM. *Cycl. testā patentissimè excavato-umbilicatā, depresso-turbinatā, fumeo-griseā, maculis parvis fulvis et albis ad carinas et suturas articulatā, spirā elevatiusculā, anfractibus undique decussatim striatis, supernè declivi-planis, deinde acutè remotè tricarinatis carinis duabus superioribus laminato-aculis; aperturā subcirculari, fauce purpureo-fuscā, labro subreflexo, albo, interdum sanguineo.*

THE BEAUTIFUL CYCLOSTOMA. Shell very openly excavately umbilicated, depressly turbinated, smoky-grey, articulated at the keels and sutures with small fulvous and white spots; spire somewhat raised, whorls everywhere decussately striated, slopingly flattened round the upper part, then sharply distantly three-keeled, the two upper keels laminately acute; aperture nearly circular, interior purple-brown, lip moderately reflected, white, sometimes blood-stained.

SOWERBY, Pro. Zool. Soc. 1849, p. 15. pl. 2. f. 8, 9.

Hab. Madagascar.

This truly beautiful shell is formed on the type of the old *C. carinatum*, but it is a very distinct species.

Species 32. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA CASTUM. *Cycl. testā subprofundè umbilicatā, globoso-turbinatā, tenui, semipellucido-albā, ad peripheriam fuscescente obscurè fasciatā, anfractibus rotundatis, undique densè spiratiler tenuiliratis, interstitiis striis subtilibus obliquis minutè decussatis; aperturā circulari, labro tenuè expanso.*

THE CHASTE CYCLOSTOMA. Shell rather deeply umbi-

licated, globosely turbinated, thin, semitransparent-white, obscurely banded with pale brown at the periphery, whorls rounded everywhere, densely finely ridged, interstices minutely decussated with fine oblique striæ; aperture circular, lip thinly expanded.

PFEIFFER, Pro. Zool. Soc. 1854, p. 150.

Hab. Madagascar.

Resembling *C. asperum* in general appearance, but more densely and finely sculptured, while the whorls are more loosely openly convoluted.

Species 33. (Mus. Cuming.)

CYCLOSTOMA MODESTUM. *Cycl. testā latissimè patentè umbilicatā, depressā, subdiscoideā, fuscescente-albā, spirā planā, anfractibus angustis, ad suturas impressis, deinde rotundatis, undique spiraliter liratis et striatis, liris subdistantibus, striis transversis scabrosis densè decussatis; aperturā obliquè circulari, parvā, labro anticè fimbriato.*

THE MODEST CYCLOSTOMA. Shell very broadly openly umbilicated, depressed, nearly discoid, brownish-white; spire flat, whorls narrow, impressed at the sutures, then rounded, everywhere spirally ridged and striated, the ridges being rather distant, densely decussated with transverse scabrous striæ; aperture obliquely circular, small, lip frilled in front.

PETIT, Journ. Conch. 1850, p. 50. pl. 4. f. 2.

Hab. Island of Abd-el-Goury; Petit.

This species is convoluted on the same plan as the little thread-encircled *C. liratum*, but the sculpture is much more densely and strongly developed.





34



35a



35b



36a



37a



37b



38b



38



39



40

CYCLOSTOMA

PLATE VII.

Species 34. (Mus. Cuming.)

CYCLOSTOMA ENCAUSTICUM. *Cycl. testā subampliter perspective unibilicatā, depressē globosā, candidā, infra peripheriam obscurē rufo-fusco fasciatā, anfractibus subangustis, undique creberrimē reticulatis; aperturā obliquē ocatā, labro tenuē reflexo, supra umbilicum peculiariter latissimē tenuē expanso,*

THE ENAMELLED CYCLOSTOMA. Shell rather largely perspective unibilicated, depressly globose, white, obscurely banded with red-brown beneath the periphery, whorls rather narrow, everywhere very closely reticulated; aperture obliquely ovate, lip thinly reflected, peculiarly very broadly thinly expanded over the umbilicus.

Hab. ——— ?

A very characteristic pure-white species, conspicuously finely reticulated throughout its surface, with the lip peculiarly expanded over the umbilicus, so as to form a broad thin lamina of shining white enamel.

Species 35. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA DELICIOSUM. *Cycl. testā modicē unibilicatā, globoso-turbinatā, tenuiculā, cinnamomeā, anfractibus supra declivi-convexis, deinde rotundatis, carinis tribus albidis subtilibus pluribusque minoribus cingulatis; aperturā circulari, labro tenuē reflexo.*

THE PRETTY CYCLOSTOMA. Shell moderately umbilicated, globosely turbinated, rather thin, cinnamon-coloured, whorls slopingly convex above, then rounded, encircled with three fine whitish keels and several smaller ones; aperture circular, lip thinly reflected.

FÉRUSSAC, Sowerby, *Thes. Conch. Supp.* p. 162. pl. 31 B. f. 314, 315.

Hab. Madagascar.

A delicate cinnamon-coloured shell, encircled with several fine thread-like whitish keels.

Species 36. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA CARINIFERUM. *Cycl. testā ampliter perspective unibilicatā, depressā, subdiscoidē, aurantio-fulvā, fusco subtilissimē lineari-articulatā, anfractibus subangustis, rotundatis, carinis filiformibus numerosis*

ringulatis; aperturā circulari, labro expanso, rividē aurantio-rufo.

THE KEELED CYCLOSTOMA. Shell largely perspective unibilicated, depressed, nearly discoid, orange-fulvous, finely linearly articulated with brown, whorls rather narrow, rounded, encircled with numerous thread-like keels; aperture circular, lip expanded, bright orange-red.

SOWERBY, *Spec. Conch. f.* 197, 198.

Cyclostoma spectabile, Petit.

Hab. Madagascar.

An elegantly-formed thread-keeled shell, with a deep orange-red lip.

Species 37. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA CHLOROTICUM. *Cycl. testā perspective unibilicatā, orbiculari-depressā, tenuiculā, albā, lutescente pallidissimē fasciatā, anfractibus obliquē striatulis, liris confertis inaequalibus circa umbilicum validioribus cingulatis; aperturā circulari, labro parum reflexo.*

THE YELLOWISH CYCLOSTOMA. Shell perspective unibilicated, orbicularly depressed, rather thin, white, very faintly banded with yellow, whorls obliquely finely striated, encircled with close-set unequal ridges, which are stronger around the umbilicus; aperture circular, lip but little reflected.

PFEIFFER, *Pro. Zool. Soc.* 1854, p. 161.

Hab. Madagascar.

The faint yellowish bands of this subdiaphanous shell are probably indications of a darker colouring than has yet been observed.

Species 38. (Mus. Cuming.)

CYCLOSTOMA STRIATULUM. *Cycl. testā subangustē profundē unibilicatā, globoso-turbinatā, solidā, fluorescente albidā, anfractibus convexis, ad peripheriam obscurē angulatis, striis confertis elevatis cinctis; aperturā circulari, labro viz reflexo.*

THE FINELY-STRIATED CYCLOSTOMA. Shell rather narrowly deeply umbilicated, globosely turbinated, solid, yellowish-white, whorls convex, obscurely angled at

the periphery, encircled with close-set raised striæ ; aperture circular, lip scarcely reflected.

PFEIFFER, Pro. Zool. Soc. 1852, p. 147.

Hab. — ?

This species is founded upon a specimen in a very imperfect bleached state.

Species 39. (Mus. Cuming.)

CYCLOSTOMA UNICOLOR. *Cycl. testā excavato-umbilicatā, globoso-turbinatā, solidā, opaco-albidā, ad apicem fuscescente, anfractibus spiraliter lirato-striatis, ad peripheriam obtusè carinatis, in umbilicum validè carinatis; aperturā circulari, labro breviter reflexo.*

THE ONE-COLOURED CYCLOSTOMA. Shell excavately umbilicated, globosely turbinated, solid, opaque-white, brownish at the apex, whorls spirally ridge-striated, obtusely keeled at the periphery, strongly keeled within the umbilicus; aperture circular, lip shortly reflected.

Hab. — ?

The form of this species is very characteristic, but it is devoid of colour, except in the vicinity of the apex.

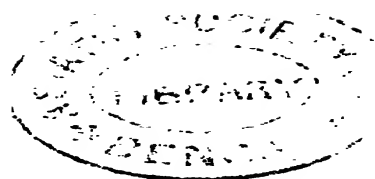
Species 40. (Mus. Cuming.)

CYCLOSTOMA EQUIVOCUM. *Cycl. testā compressè umbilicatā, conico-turbinatā, solidiusculā, flavescente-albā, rufo-castaneo obscurè trifusciatā, anfractibus rotundatis, undique rugoso-malleatis; aperturā circulari, labro duplici, interno sanguineo-rufo, externo plano-fimbriato.*

THE DOUBTFUL CYCLOSTOMA. Shell compressly umbilicated, conically turbinated, rather solid, yellowish-white, encircled with three obscure red-brown bands, whorls rounded, everywhere roughly malleated; aperture circular, lip duplex, inner lip blood-red, outer lip flatly frilled.

PFEIFFER, MS. in Mus. Cuming.

It is a little doubtful whether this species belongs to this section of the family.





CYCLOSTOMA.

PLATE VIII.

Species 41. (Mus. Cuming.)

CYCLOSTOMA INSULARE. *Cycl. testā perangustē umbilicatā, globoso-conicā, fuscescente-albā, ferrugineo lineatā, purpureo variē fasciatā, anfractibus rotundatis, spirāliter crebriliratis, liris lineis subscabris decussatis; aperturā circulari, labro parum reflexo.*

THE INSULAR CYCLOSTOMA. Shell very narrowly umbilicated, globosely conic, brownish-white, tinged with rust, variously banded with purple, whorls rounded, spirally closely ridged, ridges crossed with rather scabrous lines; aperture circular, lip but little reflected.

PFEIFFER, Pro. Zool. Soc. 1852, p. 64.

Hab. Mauritius.

Dr. Pfeiffer describes this species as having a rather solid shell, but it seems to me of light substance.

Species 42. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA GOUDOTIANUM. *Cycl. testā angustē umbilicatā, globoso-conicā, tenuiculā, flavescēte, nigricante-chastreo variē fasciatā aut lineatā, anfractibus convexis, tumidiusculis, lavigatis; aperturā circulari, labro tenuē reflexo.*

GOUDOT'S CYCLOSTOMA. Shell narrowly umbilicated, globosely conic, rather thin, yellowish, variously banded or lineated with dark chestnut, whorls convex, rather swollen, smooth; aperture circular, lip thinly reflected.

SOWERBY, Thes. Conch. p. 130. pl. 29. f. 193.

Hab. Natal; Krauss.

A prettily-painted species, of a different type from that of the Madagascar species.

Species 43. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA ISABELLA. *Cycl. testā subangustē umbilicatā, globoso-turbinatā, rufescente-albā, anfractibus convexis, spirāliter sulcato-striatis; aperturā circulari, labro reflexo.*

THE ISABELLA CYCLOSTOMA. Shell rather narrowly umbilicated, globosely turbinated, reddish-white, whorls convex, spirally groove-striated; aperture circular, lip reflected.

PFEIFFER, MS. in Mus. Cuming.

Hab. Madagascar.

Of a peculiar reddish-fawn colour, spirally groove-striated throughout.

Species 44. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA SOWERBYI. *Cycl. testā modicē umbilicatā, globoso-turbinatā, fulco-ferrugineā, rufo-fusco lineari-articulatā, anfractibus rotundatis, ad suturas impressis, liris obtusis spirāliter junctis; aperturā circulari, labro latē callosoreflexo.*

SOWERBY'S CYCLOSTOMA. Shell moderately umbilicated, globosely turbinated, fulvous-rust, linearly articulated with red-brown, whorls rounded, impressed at the sutures, spirally corded with obtuse ridges; aperture circular, lip broadly callously reflected.

Cyclostoma megacheilus, Sowerby (not of Potiez and Michaud), Thes. Conch. p. 131. pl. 31. f. 206.

Cyclostoma Sowerbyi, Pfeiffer.

Hab. —?

Delicately corded throughout with red-brown articulated linear ridges.

Species 45. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA CREPLIN. *Cycl. testā subangustē umbilicatā, globoso-conicā, tumidiusculā, ferrugineo-fusca, rufo lineari-articulatā, anfractibus convexis, ultimo multo majore, undique carinato-liratis, lirā ad peripheriam prominentiore, acuta; aperturā obliquē circulari, labro crassē reflexo.*

CREPLIN'S CYCLOSTOMA. Shell rather narrowly umbilicated, globosely conic, rather swollen, rust-brown, linearly articulated with red, whorls convex, the last much the larger, everywhere keel-ridged, ridge at the periphery more prominent, sharp; aperture obliquely circular, lip thickly reflected.

DUNKER, Zeitsch. für Malac. 1848, p. 177.

Hab. Zanzibar.

Resembling the preceding species, in being encircled with red-articulated ridges; but the last whorl is much broader and tumid.

CYCLOSTOMA.—PLATE VIII.

Species 46. (Mus. Cuming.)

CYCLOSTOMA LINEATUM. *Cycl. testā modicè umbilicatā, conico-turbinatā, tenuiculā, livido-fulvā, lineis pallidè castaneis, alternatim sublioribus cingulatā, anfractibus rotundatis, spiraliter lineari-impressis; aperturā circulari, labro vix reflexo.*

THE LINEATED CYCLOSTOMA. Shell moderately umbilicated, conically turbinated, rather thin, livid-fulvous,

encircled with pale-chestnut lines, which are alternately finer, whorls rounded, spirally linearly impressed; aperture circular, lip scarcely reflected.

PFEIFFER, Pro. Zool. Soc. 1852, p. 65.

Hab. — ?

Of very simple character, light in substance, and of a livid-fulvous hue.



47



50



51



52



53



54

CYCLOSTOMA.

PLATE IX.

Species 47. (Mus. Cuming.)

CYCLOSTOMA PARVISPIRUM. *Cycl. testā globosā, angustissime umbilicatā, fulvā, purpureo-fusco lineatā, et infra peripheriam fasciatā; anfractibus convexis, levibus, subventricosis, ultimo circa umbilicum subacutē lirato; aperturā subamplā, circulari, labro vix reflexo.*

THE SMALL-SPIRED CYCLOSTOMA. Shell globose, very narrowly umbilicated, fulvous, lineated and, beneath the periphery, banded with purple-brown; whorls convex, smooth, slightly ventricose, last whorl rather sharply ridged around the umbilicus; aperture rather large, circular, lip scarcely reflected.

PEIFFER, *Pro. Zool. Soc.* 1854, p. 128.

Hab. — ?

Of a more ventricose growth than *C. ligatum*, to which it is closely allied, with a smaller spire.

Species 48. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA RETICULATUM. *Cycl. testā subampliter umbilicatā, turbinatā, rufo-castaneā, opaco-albo undique conspicuē reticulatā; anfractibus subangustis, rotundatis, lineis spiralibus subobsoletis, striisque longitudinalibus decussatis; aperturā circulari, subamplā, superne sinuatā, fauce intensē castaneo-rufā, labro expanso-reflexo.*

THE RETICULATED CYCLOSTOMA. Shell rather largely umbilicated, turbinated, reddish-chestnut, conspicuously reticulated throughout with opaque-white; whorls rather narrow, rounded, decussated with rather obsolete spiral lines and longitudinal striæ; aperture circular, rather large, sinuated, interior deep chestnut-red, lip expandedly reflected.

ADAMS and REEVE, *Moll. Voy. Samarang*, p. 57. pl. 14. f. 8.

Hab. Madagascar.

The very characteristic opaque-white network of this species has very much the appearance of being a deciduous hydrophanous epidermis.

Species 49. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA MACAREÆ. *Cycl. testā subampliter umbilicatā, depressiusculā, cærulescente-albā aut fulvescente,*

zonis rufo-fuscis numerosis subinterruptis cingulatā; anfractibus superne planulatis, deinde rotundatis, supra peripheriam spiraliter validē corrugato-striatis, striis subgranatis, striis longitudinalibus subtilissimis; aperturā obliquē circulari, labro expanso, albo.

THE MACARE CYCLOSTOMA. Shell rather largely umbilicated, somewhat depressed, bluish-white or fulvous, encircled with numerous rather interrupted red-brown zones; whorls flattened round the upper part, then rounded, above the periphery strongly wrinkle-striated, the striae being grained, longitudinal striae very fine; aperture circular, lip expanded, white.

PETIT, *Journ. Conch.* vol. iv. p. 361. pl. 11. f. 1.

Hab. Madagascar.

The specimen here figured, an authentic one in fine state, lately acquired by Mr. Cuming, is encircled with numerous red-brown zones on a livid bluish-white ground, and the surface of the whorls above the periphery is conspicuously grain-striated.

Species 50. (Mus. Cuming.)

CYCLOSTOMA XANTHOCHEILUM. *Cycl. testā angustē umbilicatā, globoso-conoidē, griseo-fulvā, griseo-rufescente obscurē fasciatā; anfractibus convexis, rudē subtiliter striatis et malleatis; aperturā subamplā, labro expanso, aurantio.*

THE ORANGE-LIP CYCLOSTOMA. Shell narrowly umbilicated, globosely conoid, greyish-fulvous, obscurely banded with grey-red; whorls convex, rudely finely striated and malleated; aperture rather large, lip expanded, orange.

SOWERBY, *Thesaurus Conch. Supp.* p. 158. pl. 31a. f. 294, 295.

Hab. Madagascar.

A rather solid red-banded shell, covered with a hard grey coating, which, in the last whorl, renders the band very obscure.

Species 51. (Mus. Cuming.)

CYCLOSTOMA PYROSTOMA. *Cycl. testā modicē umbilicatā, globoso-turbinatā, fulvo-spadicā, zonā purpureo-griseā infra peripheriam cingulatā; anfractibus rotundatis,*

subventricosis, spirāliter tenuē liratis et malleatis; aperturā circulari, labro expanso, parum reflexo, vividē purpureo-rufo.

THE RED-MOUTH CYCLOSTOMA. Shell moderately umbilicated, globosely turbinated, fulvous-fawn, encircled below the periphery with a purple-grey zone; whorls rounded, rather ventricose, spirally finely ridged and malleated; aperture circular, lip expanded, but little reflected, deep purple-red.

Cyclostoma hæmostoma, Grateloup (not of Anton), Act. Soc. Linn. Bordeaux, p. 437. pl. 3. f. 5.

Cyclostoma pyrostoma, Sowerby.

Hab. Madagascar.

As in most species of the genus, there is less indication of sculpture below the periphery of the shell than above it. The deep purple-red of the lip passes somewhat into the interior.

Species 52. (Mus. Cuming.)

CYCLOSTOMA KRAUSSIANUM. *Cycl. testā angustē umbilicatā, globoso-conicā, fulvo-spadiceā, violaceo-purpureo fasciatā et lineatā; anfractibus subventricosis, spirāliter undique liratis, interstitiis striis longitudinalibus decussatis; aperturā subamplā, labro tenui, albido, parum reflexo.*

KRAUSS'S CYCLOSTOMA. Shell narrowly umbilicated, globosely conic, fulvous-fawn, banded and lined with violet-purple; whorls rather ventricose, spirally ridged throughout, the interstices being decussated with longitudinal striæ; aperture rather large, lip thin, whitish, but little reflected.

PFEIFFER, Pro. Zool. Soc. 1852, p. 64.

Hab. Natal.

A true Madagascar type, collected by Dr. Krauss at Natal.

Species 53. (Mus. Cuming.)

CYCLOSTOMA UNIFASCIATUM. *Cycl. testā subangustē um-*

bilicatā, griseā, violaceo-purpureo infra peripheriam obscurē angustē fasciatā; anfractibus subventricosis, lævibus, ultimo circa umbilicum lirato; aperturā subcirculari, fauce croceā, labro simplici.

THE ONE-BANDED CYCLOSTOMA. Shell rather narrowly umbilicated, grey, obscurely narrowly banded below the periphery; whorls rather ventricose, smooth, last whorl ridged around the umbilicus; aperture nearly circular, interior yellow, lip simple.

SOWERBY, Tankerville Cat. App. p. viii.

Otopoma unifasciatum, Pfeiffer.

Hab. Madagascar.

A smooth ventricose shell, of which the colour, bright interiorly, is more or less obscured without by the grey coating which is characteristic of this form of the genus.

Species 54. (Mus. Cuming.)

CYCLOSTOMA LIGATUM. *Cycl. testā subangustē umbilicatā, globoso-turbinatā, griseā, violaceo-purpureo lineatā et unifasciatā; anfractibus rotundatis, subventricosis, malleatis, striis longitudinalibus et spirālibus obsoletē reticulatis, ultimo circa umbilicum obtusē lirato; aperturā circulari, fauce purpureo-castaneā, labro subexpanso, albo.*

THE BOUND CYCLOSTOMA. Shell rather narrowly umbilicated, globosely turbinated, grey, lined and one-banded with violet-purple, whorls round, rather ventricose, malleated, obsoletely reticulated with longitudinal and spiral striæ, last whorl obtusely ridged around the umbilicus; aperture circular, interior purple-chestnut, lip slightly expanded, white.

Nerita ligata, Müller, Hist. Venn. vol. ii. p. 181.

Turbo ligatus, Chemnitz.

Cyclostoma ligatum, Lamarek.

Hab. Natal, Cape of Good Hope.

Müller's original type, of which so many closely allied species have been lately described from Madagascar.





56a



57



58a



59b



61.



60b.

CYCLOSTOMA.

PLATE X.

Species 55. (Mus. Cuming.)

CYCLOSTOMA PULCHRUM. *Cycl. testā angustè umbilicatā, turbinatā, fulvo-spadiceā, fusco-strigatā et articulatè punctatā, versus apicem rubellā; anfractibus rotundatis, inæqualiter multicarinatis, carinis subscabrosis; aperturā circulari, labro tenue, parum expanso.*

THE BEAUTIFUL CYCLOSTOMA. Shell narrowly umbilicated, turbinated, fulvous-rust, streaked and articulatesly dotted with brown, reddish towards the apex; whorls rounded, unequally many-keeled, keels rather scabrous; aperture circular, lip thin, but little reflected.

GRAY, in Griff. Anim. King. pl. 28. f. 3.

Cyclostoma ortiz, Valenciennes.

Cyclostoma multicarinatum, Jay.

Cyclostoma Arthuri, Grateloup.

Hab. Seychelle Islands.

Distinguished a by characteristic articulated pattern of colouring on the keels.

Fig. 56. (Fig. a, b, Mus. Cuming.)

The interesting specimen here figured proves to be a variety of *Cyclophorus Amboinensis*.

Species 57. (Mus. Cuming.)

CYCLOSTOMA SINUATUM. *Cycl. testā subangustè umbilicatā, globoso-turbinatā, solidiusculā, albā; anfractibus rotundatis, supernè et infernè quinquecarinatis, medio lævibus; aperturā circulari, labro reflexo, supernè latè sinuato.*

THE SINUATED CYCLOSTOMA. Shell narrowly umbilicated, globosely turbinated, rather solid, white; whorls rounded, five-keeled above and below, smooth in the middle; aperture circular, lip reflected, broadly sinuated at the upper part.

PFEIFFER, Pro. Zool. Soc. 1855, p. 105.

Hab. Madagascar?

Curiously keeled round the upper and lower parts of the whorls, whilst the middle is smooth.

Species 58. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA ZONULATUM. *Cycl. testā angustè subobtectè umbilicatā, subpyramidal-turbinatā, cinereā, versus basin castaneo lineatā et fasciatā; anfractibus spiralliter striatis et acutè multicarinatis, carinis albidis, anfractu ultimo multo majore; aperturā circulari, labro latè plano-expanso, albo.*

THE FINELY-ZONED CYCLOSTOMA. Shell with a narrow partially covered umbilicus, somewhat pyramidally turbinated, ash-coloured, lineated and banded towards the base with chestnut; whorls spirally striated and sharply many-keeled, keels whitish, last whorl much the larger; aperture circular, lip broadly flatly expanded, white.

FÉRUSAC, MS., Sowerby, Thes. Conch. Supp. p. 159. pl. 31. a. f. 296, 297.

Hab. —?

The keels of this species are like white threads, and the linear painting is wholly below the periphery.

Species 59. (Mus. Cuming.)

CYCLOSTOMA ICTERICUM. *Cycl. testā angustè obsoletè umbilicatā, subpyramidal-turbinatā, sordide fulvā; anfractibus supernè decliviusculis, deinde convexis, spiralliter undique regulariter latis; aperturā circulari, labro latè reflexo.*

THE JAUNDICED CYCLOSTOMA. Shell with a narrow covered umbilicus, somewhat pyramidally turbinated, dull-yellow; whorls rather sloping round the upper part, then convex, spirally regularly ridged throughout; aperture circular, lip broadly reflected.

SOWERBY, Thes. Conch. p. 131. pl. 31. f. 268, 269.

Cyclophorus ictericus, Pfeiffer.

Hab. —?

The dull-yellow colouring arises mainly from the bad state of the specimens.

Species 60. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA ZONATUM. *Cycl. testā angustissimè subobtectè umbilicatā, subpyramidal-turbinatā, albā, nigricante-fusco nunc unifasciatā nunc multifasciatā; anfractibus declivi-rotundatis, lævibus vel striis subtilis-*

CYCLOSTOMA. - PLATE X.

simè decussatis; aperturâ subamplâ, obliquè patulâ, labro latissimè expanso-reflexo.

THE ZONED CYCLOSTOMA. Shell with a very narrow nearly covered umbilicus, somewhat pyramidally turbinated, white, sometimes one-banded, sometimes many-banded with blackish brown; whorls slopingly rounded, smooth or very finely decussated with striæ; aperture rather large, obliquely open, lip very broadly expandedly reflected.

PETIT, Journ. Conch. vol. i. p. 50. pl. 4. f. 7.

Hab. Madagascar.

An elegantly convoluted variously banded species of rather light inflated growth.

Species 61. (Mus. Cuming.)

CYCLOSTOMA SARCODES. *Cycl. testâ angustâ amollicatâ, conico-turbinatâ, carnèâ, ferrugineo tinctâ, purpuræ lineatâ et unifasciatâ; unfractibus convexis, obtusè carinatis et malleatis, spirâ elevatâ; aperturâ circulari, parvisculâ, labro simplici, viz reflexo.*

THE FLESH-COLOURED CYCLOSTOMA. Shell narrowly umbilicated, conically turbinated, flesh-coloured, tinged with rust, lineated, and one-banded with purple; whorls convex, obtusely keeled and mal-leated, spire elevated; aperture circular, rather small, lip simple, scarcely reflected.

PFEIFFER, Pro. Zool. Soc. 1856, p. 339.

Hab. Madagascar.

A form of *C. ligatum*, with the spire slenderly elevated.





64



65



CYCLOSTOMA.

PLATE XI.

Species 62. (Mus. Cuming.)

CYCLOSTOMA BRONNI. *Cycl. testā angustē umbilicatā, ovato-turritā, cinereo-fusca, punctis rufis aliquando obsolete notatā; anfractibus rotundatis, longitudinaliter confertissimē costulato-striatis, sericinis, striis ad suturas plicatis; aperturā circulari, parvisculā, labro angustē fimbriato, fimbriā superne sinuatā.*

BRONN'S CYCLOSTOMA. Shell narrowly umbilicated, ovately turreted, ash-brown, sometimes obsoletely marked with red dots; whorls rounded, longitudinally very closely rib-striated, silky, striae puckered into folds at the suture; aperture circular, rather small, lip narrowly fimbriated, frill sinuated at the upper part.

ADAMS, Pro. Nat. Hist. Soc. Boston, U.S. 1845, p. 11.

Cyclostoma papillare, Férussac (ined.).

Cyclostoma fusco-lineatum, Adams.

Hab. Jamaica.

Remarkable for the silken texture of its surface, arising from the regularity and close arrangement of the rib-like striae.

Species 63. (Mus. Cuming.)

CYCLOSTOMA LEVIGATUM. *Cycl. testā angustissimē umbilicatā, ovato-globosā, fuscā, castaneo ruriē zonatā; anfractibus ventricos, spiraliter regulariter liris, ad suturas fimbriato-crenatis; aperturā subcirculari, labro vix reflexo.*

THE SMOOTH CYCLOSTOMA. Shell very narrowly umbilicated, ovately globose, fulvous, variously zoned with chestnut; whorls ventricose, spirally regularly ridged, fimbriately crenated at the sutures; aperture nearly circular, lip scarcely reflected.

WEBB and BERTHELOT, Moll. Canar. p. 322.

Cyclostoma Canariense, D'Orbigny.

Hab. Island of Teneriffe, Canaries.

A delicately painted ventricose type, plicately crenated at the sutures.

Species 64. (Mus. Cuming.)

CYCLOSTOMA UNDELATUM. *Cycl. testā angustissimē umbilicatā, globoso-conicā, fuscā, purpureo unifasciatā;*

anfractibus undique spiraliter lineari-sulcatis, ad suturas undato-plicatis; aperturā circulari, labro parum reflexo.

THE WAVED CYCLOSTOMA. Shell very narrowly umbilicated, globosely conic, fulvous, one-banded with purple; whorls spirally linearly grooved throughout, wave-plaited at the sutures; aperture circular, lip but little reflected.

Cyclostoma fimbriatum, Lamarek (not of Schumacher nor Quoy and Gaimard), Anim. sans vert. vol. viii. p. 360.

Cyclostoma undulatum, Sowerby.

Hab. Mauritius.

Curiously distinguished at the suture by a nodulously waved plication.

Species 65. (Mus. Cuming.)

CYCLOSTOMA SEMIDECUSSATUM. *Cycl. testā profundē depressē orbiculari-umbilicatā, subpellucido-albā, epidermid cornē stramineā indutā; anfractibus angustis, longitudinaliter densē irregulariter corrugato-striatis; aperturā pyriformi-circulari, labro simplici.*

THE SEMIDECUSSATED CYCLOSTOMA. Shell deeply umbilicated, orbicularly depressed, semitransparent white, covered with a horny, straw-coloured epidermis; whorls narrow, longitudinally densely irregularly wrinkle-striated; aperture pyriformly circular, lip simple.

PFEIFFER, Zeitschr. für Malac. 1847, p. 106.

Hab. — ?

The shell here figured is labelled in Mr. Cuming's collection, by Dr. Pfeiffer, as his *C. semidecussatum*, and a variety of *C. citrinum*, Sowerby. The two species appear to me to be distinct.

Species 66. (Mus. Cuming.)

CYCLOSTOMA SULCATUM. *Cycl. testā angustissimē umbilicatā, ovato-turritā, albā vel carnēā; anfractibus rotundatis, spiraliter undique regulariter liris, liris sæpē alternatim majoribus, interstitiis striis decussatis; aperturā subcirculari, superne sinuatā, labro simplici.*

THE GROOVED CYCLOSTOMA. Shell very narrowly um-

bilicated, ovately turreted, white or flesh-coloured; whorls rounded, spirally regularly ridged throughout, ridges often alternately larger, interstices decussated with striae; aperture nearly circular, sinuated at the upper part, lip simple.

DRAPARNAUD, Hist. Moll. terr. et flav. p. 33. pl. 13. f. 1.

Cyclostoma affinis, Rissó.

Cyclostoma polysulcatum, Potiez and Michaud.

Cyclostoma Siculum, Sowerby.

Cyclostoma aurantium, Anton.

Cyclostoma coloratum, Ziegler.

Cyclostoma phaleratum, Ziegler.

Cyclostoma reticulatum, Ziegler.

Cyclostoma Melitense, Sowerby.

Cyclostoma tenellum, Sowerby.

Hab. Southern Europe and North Africa.

The principal variation in this species consists in the spiral ridges being sometimes uniform in size, sometimes alternately larger.

Species 67. (Mus. Cuming.)

CYCLOSTOMA CAFFRUM. *Cycl. testâ modicè umbilicatâ, globoso-turbinatâ, griseâ; anfractibus rotundatis, superne et circa umbilicum truncatis; aperturâ pyriformi-circulari, fauce fulvescente, rufo fasciatâ.*

THE CAFFRE CYCLOSTOMA. Shell moderately umbilicated, globosely turbinated, grey; whorls rounded, finely ridged at the upper part and round the umbilicus; aperture pyriformly circular, interior fulvous, banded with chestnut.

BECK, MS. in Mus. Cuming.

Hab. — ?

Dr. Beck, of Copenhagen, named this species in Mr. Cuming's cabinet, and I am unable to identify it with any other, though it does not appear in Pfeiffer's monograph.

Species 68. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA JAYANUM. *Cycl. testâ subangustè profundè umbilicatâ, orato-turritâ, albidâ, strigis latis fuscis oblique ornatâ; anfractibus rotundatis, longitudinaliter confluentissimè subtiliter costulato-striatis, sericiis, striis ad suturas plicatis; aperturâ circulari, parvisculâ, labro latè concavè-expanso, aurantio-rufo, marginibus superne sinuato-angulatis.*

JAY'S CYCLOSTOMA. Shell rather narrowly deeply umbilicated, ovately turreted, white, ornamented with oblique broad brown streaks; whorls rounded, longitudinally very closely finely rib-striated, silky, striae puckered into folds at the sutures; aperture circular, rather small, lip broadly concavely expanded, orange-red, margins sinuately angled at the upper part.

Cyclostoma solitum, Adams (not of Menke), Contrib. to Conch. No. 1. p. 7.

Cyclostoma Jayanum, Adams.

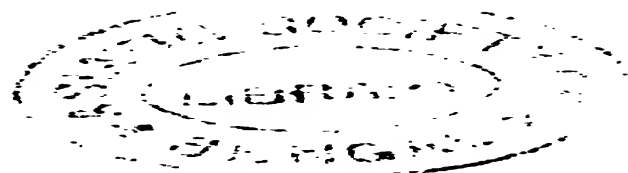
Cyclostoma histrio, Pfeiffer.

Hab. Jamaica.

The longitudinal streaks are sometimes absent or very faintly indicated, and delicate spiral bands are visible.

Fig. 69. (Mus. Cuming.)

The specimen here figured, at first thought to be a species distinct from any of the preceding, is a smooth variety of *C. Kraussianum* represented at Pl. IX. Fig. 52.





70.



72



73.



74b.



75



74d.



CYCLOSTOMA.

PLATE XII.

Species 70. (Mus. Cuming.)

CYCLOSTOMA ELEGANS. *Cycl. testâ angustè umbilicatâ, ovatâ, violaceo- vel lutescens-œsiâ, punctis rufo-fuscescentibus subquadratis æpissimè articulatâ; anfractibus convexis, liris spiralibus subconfertis funiculatis, interstitiis striis longitudinalibus reticulatis; aperturâ subpyriformi-rotundatâ, superne sinuatâ, labro simplici.*

THE ELEGANT CYCLOSTOMA. Shell narrowly umbilicated, ovate, violet or yellowish-drab, mostly articulated with somewhat square red-brown dots; whorls convex, corded with rather close-set spiral ridges, the interstices being reticulated with longitudinal striae; aperture somewhat pyriformly rounded, sinuated at the upper part, lip simple.

Nerita elegans, Müller, Hist. Verm. vol. ii. p. 177.

Turbo lincina, Chemnitz.

Turbo elegans, Gmelin.

Turbo striatus, Da Costa.

Turbo reflexus, Olivi.

Cyclostoma elegans, Draparnaud.

Turbo marmoreus, Brown.

Cyclostoma marmoreum, Sowerby.

Hab. Central and southern Europe.

The only species of *Cyclostoma* inhabiting the British Isles.

Species 71. (Mus. Cuming.)

CYCLOSTOMA FALLAX. *Cycl. testâ angustè umbilicatâ, cylindraceo-turritâ, albidâ, lineis flexuosis fulco-fuscescentibus longitudinaliter pictâ; anfractibus convexis, striis spiralibus et longitudinalibus minutissimè lamellato-reticulatis, anfractu ultimo soluto, suturis plicato-crenatis; aperturâ obliquè ovatâ, labro tenuè sub-
expanso.*

THE DECEITFUL CYCLOSTOMA. Shell narrowly umbilicated, cylindrically turreted, whitish, painted longitudinally with fulvous-brown flexuous lines; whorls convex, very minutely lamellarly reticulated with spiral and longitudinal striae, last whorl loosened, sutures plicately crenated; aperture obliquely ovate, lip thin, a little expanded.

PFEIFFER, Pro. Zool. Soc. 1852, p. 65.

Cistula? fallax, Pfeiffer.

Hab. — ?

Evidently belonging to the West India type of the genus, although the habitat is not given.

Species 72. (Mus. Cuming.)

CYCLOSTOMA DISSECTUM. *Cycl. testâ angustè umbilicatâ, cylindraceo-ovatâ, solidiusculâ, fulrescente, versus apicem rosaceâ; anfractibus convexis, spiralliter calidè liris, interstitiis obliquè minutissimè striatis, suturis angustè canaliculatis; aperturâ parvisculâ, obliquè ovatâ, labro simplici.*

THE CUT CYCLOSTOMA. Shell narrowly umbilicated, cylindrically ovate, rather solid, fulvous-pink towards the apex; whorls convex, spirally strongly ridged, interstices obliquely very minutely striated, sutures narrowly channelled; aperture rather small, obliquely ovate, lip simple.

SOWERBY, Thesaurus Conch. p. 105. pl. 24. f. 58, 59.

Hab. — ?

The habitat of this species is not known, and it is of quite a distinct type from any other. The spiral ridges have almost the character of obtuse keels, and the sutures are distinctly channelled.

Species 73. (Mus. Cuming.)

CYCLOSTOMA ALBUM. *Cycl. testâ angustissimè umbilicatâ, ovato-conicâ, opalinâ, nitidâ; anfractibus convexis, levibus, vel longitudinaliter minutissimè striatis; aperturâ pyriformi-ovatâ, labro simplici, subincrassato.*

THE WHITE CYCLOSTOMA. Shell very narrowly umbilicated, ovately conic, opal-white, shining; whorls convex, smooth, or longitudinally very minutely striated; aperture pyriformly ovate, lip simple, rather thickened.

SOWERBY, Thesaurus Conch. p. 141. pl. 28. f. 154.

Hab. Jamaica.

Of a delicate semitransparent opaline-white aspect, apparently smooth, but very distinctly longitudinally striated beneath the lens.

Species 74. (Fig. *a, b, c, d*, Mus. Cuming.)

CYCLOSTOMA HUMPHREYANUM. *Cycl. testā angustè subprofundè umbilicatā, ovato-turritā, albidā, rufo-fusco variè pictā; anfractibus convexis, longitudinaliter confertissimè lirato-striatis, striis interdum gradatim obsolete; aperturā circulari, margine interdum cicidè aurantio-rufo, labro latissimè plano-dilatato.*

HUMPHREY'S CYCLOSTOMA. Shell narrowly rather deeply umbilicated, ovately turreted, whitish, variously painted with red-brown; whorls convex, longitudinally very closely ridge-striated, striae sometimes gradually obsolete; aperture circular, sometimes bright orange-red at the edge, lip very broadly flatly dilated.

Cyclostoma pictum, Sowerby (not of Pfeiffer), *Thesaurus Conch.* p. 142. pl. 28. f. 157, 158.

Cyclostoma Humphreyanum, Pfeiffer.

Choanopoma Humphreyanum, Gray.

Hab. Jamaica.

Remarkable for its broadly dilated lip and great variety of colouring, the aperture being sometimes edged with bright orange-red.

Species 75. (Mus. Cuming.)

CYCLOSTOMA RANGELINUM. *Cycl. testā angustè subprofundè umbilicatā, subelongato-turritā, lutescente-cornuā, subpellucidā, maculis parvis sagittiformibus castaneis multifasciatā; anfractibus convexis, nudiq̃ue*

minutè reticulatis, ad suturas rudè plicato-crenalis; aperturā pyriformi-ovalā, labro duplici, vix expansa.

RANGEL'S CYCLOSTOMA. Shell narrowly rather deeply umbilicated, somewhat elongately turreted, yellowish-horny, semitransparent, many-banded with arrow-headed chestnut spots; whorls convex, minutely reticulated throughout, rudely plicately crenated at the sutures; aperture pyriformly ovate, lip duplex, scarcely expanded.

POEY, *Mem. Cuba*, vol. i. pl. 8. f. 13–19.

Hab. Cuba.

A fine species, especially characterized by its numerous bands of distinct arrow-headed chestnut spots.

Species 76. (Mus. Cuming.)

CYCLOSTOMA VIRGATUM. *Cycl. testā angustissimè umbilicatā, orato-conicā, fulrescente-albā, castaneo-fusco multifasciatā; anfractibus convexis, levibus, subtiliter malleatis; aperturā circulari, labro tenuè reflexo.*

THE STRIPED CYCLOSTOMA. Shell very narrowly umbilicated, ovately conical, fulvous-white, many-banded with chestnut-brown; whorls convex, smooth, delicately malleated; aperture circular, lip thinly reflected.

SOWERBY, *Thesaurus Conch.* p. 130. pl. 29. f. 192.

Cyclostoma consocium, Gray.

Hab. Madagascar.

A many-banded conical shell, with very much the aspect of a *Bulinus*.

McQuinn, D. A.
1994



79



80



81a



81b



82a



82b



CYCLOSTOMA.

PLATE XIII.

Species 77. (Mus. Cuming.)

CYCLOSTOMA SACCATUM. *Cycl. testâ angustè umbilicatâ, orato-turritâ, pallidè cornéâ, rufo-fusco multizonatâ, diaphanâ; anfractibus paucis, rotundatis, longitudinaliter confertim tenuissimè capillaceo-striatis, suturis subimpressis; aperturâ parvisculâ, rotundatâ, labro tenui, rix reflecto.*

THE BAG-LIKE CYCLOSTOMA. Shell narrowly umbilicated, ovately turreted, pale-horny, many-zoned with red-brown, transparent; whorls few, rounded, longitudinally closely very finely hair-striated, sutures rather impressed; aperture rather small, rounded, lip thin, scarcely reflected.

PFEIFFER, *Proc. Zool. Soc.* 1852, p. 65.

Hab. --- ?

Composed of fewer whorls than is usual with species of this type, more widely convoluted towards the base.

Fig. 78. (Mus. Cuming.)

The shell here figured is Mr. Sowerby's *C. Melitense*, which is a Maltese variety of the European *C. sulcatum*.

Species 79. (Mus. Cuming.)

CYCLOSTOMA SALEBROSUM. *Cycl. testâ angustè umbilicatâ, oblongo-turritâ, pellucido-albâ; anfractibus subangustis, rotundatis, spiraliter obscurè liralis, longitudinaliter confertissimè lamellato-striatis, striis ad suturas plicatis; aperturâ rotundatâ, labro tenuè reflexo, interdum dilatato.*

THE ROUGH CYCLOSTOMA. Shell narrowly umbilicated, oblong-turreted, transparent-white; whorls rather narrow, rounded, spirally obscurely ridged, longitudinally very closely lamellarly striated, striæ plicated at the sutures; aperture rounded, lip thinly reflected, sometimes dilated.

MORELET, *Test. Noviss.* p. 23.

Hab. Cuba.

The surface of this species is quite rough to the touch on account of the peculiarly rugged character of the longitudinal striæ.

Species 80. (Mus. Cuming.)

CYCLOSTOMA CHEVALIERI. *Cycl. testâ minutè umbilicatâ, orato-conicâ, pellucido-cornéâ, rufescente-fusco obscurè punctato-fasciatâ; anfractibus convexis, levibus, longitudinaliter subobsolete striatis; aperturâ circulari, labro latè plano-dilatato, marginibus subauriculatis.*

CHEVALIER'S CYCLOSTOMA. Shell minutely umbilicated, ovately conical, transparent-horny, obscurely dot-banded with reddish-brown; whorls convex, smooth, longitudinally rather obsoletely striated; aperture circular, lip broadly flatly dilated, margins slightly auriculated.

ADAMS, *Contrib. to Conch.* No. 9, p. 155.

Hab. Jamaica.

Of the same smooth typical character as *C. album*, from the same locality, sculptured in the same manner with sub-obsolete longitudinal cord-like striæ; but the shell is of a delicate transparent-horny substance, faintly banded.

Species 81. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA RETRORSUM. *Cycl. testâ minutè umbilicatâ, orato-turritâ, pellucido-cornéâ, ferruginea tinctâ; anfractibus rotundatis, lineis spiralibus striisque lamelliformibus longitudinalibus confertim serrato-clathratis; aperturâ circulari, labro latissimè calloso-dilatato, retrorso, marginibus plus minus auriculatis.*

THE TURNED-BACK CYCLOSTOMA. Shell minutely umbilicated, ovately turreted, transparent-horny, stained with rust; whorls rounded, closely serrately latticed with spiral lines and longitudinal lamelliform striæ; aperture circular, lip very broadly callously dilated, turned back, margins more or less auriculated.

ADAMS, *Contrib. to Conch.* No. 6, p. 91.

Hab. Jamaica.

The longitudinal lamelliform striæ are roughly serrated, and the lip of the aperture is remarkably broadly callously dilated and turned back.

Species 82. (Mus. Cuming.)

CYCLOSTOMA THYSANORAPHIE. *Cycl. testâ angustè umbilicatâ, conico-turritâ, sericino-albâ, rufo-fuscescente tinctâ et obscurè fasciatâ; anfractibus convexis, longi-*

indinaliter confertissimè funiculato-striatis, suturis rudè plicato-crenatis; aperturâ circulari, labro latissimè concavo-dilatato, marginibus subauriculatis.

THE FRINGE-SUTURED CYCLOSTOMA. Shell narrowly umbilicated, conically turreted, silky-white, tinged and obscurely banded with reddish-brown; whorls convex, longitudinally very closely cord-striated, sutures rudely plicately crenated; aperture circular, lip very broadly concavely dilated, margins subauriculated.

SOWERBY, Thesaurus Conch. p. 143. pl. 28. p. 162, 163.

Chouanopoma thysanoraphæ, Gray.

Hab. Jamaica.

In this species the longitudinal striae are perfectly smooth and cord-like.

Species 83. (Fig. *a, b*, Mus. Cuming.)

CYCLOSTOMA REDFIELDIANUM. *Cycl. testâ angustè umbilicatâ, ovato-turritâ, sericeo-albidâ, rufo-fuscescente nitidè fasciatâ; anfractibus convexis, longitudinaliter confertissimè funiculato-striatis; aperturâ circulari, labro latè concavo-dilatato, intus purpureo-sanguineo, marginibus subauriculatis.*

REDFIELD'S CYCLOSTOMA. Shell narrowly umbilicated, ovately turreted, silky-white, neatly banded with reddish-brown; whorls convex, longitudinally very

closely cord-striated; aperture circular, lip broadly concavely dilated, edged with purple-blood within, margins slightly auriculated.

ADAMS, Contrib. to Conch. No. 1. p. 10.

Hab. Jamaica.

Like the last species, but distinguished by a neat painting of bands, and by a rich purple-blood stain of colour on the inner edge of the margin of the aperture.

Species 84. (Mus. Cuming.)

CYCLOSTOMA GRISEUM. *Cycl. testâ minutè umbilicatâ, conico-turritâ, lilaceo-griseâ, infra peripheriam fasciâ pallidâ alterâque fuscâ ornatâ; anfractibus convexis, spiraliter confertim liris, liris albidis; apertura obliquè ovatâ, labro subexpanso.*

THE GREY CYCLOSTOMA. Shell minutely umbilicated, conically turreted, lilac-grey, ornamented with a pale band, and then a brownish band beneath the periphery; whorls convex, spirally closely ridged, ridges whitish; aperture obliquely ovate, lip a little expanded.

PREIFFER, Pro. Zool. Soc. 1853, p. 51.

Hab. Madagascar.

This has very much the appearance of *C. subliratum* in a well developed state.



85



88a



89 b



90b



CYCLOSTOMA

PLATE XIV.

Species 85. (Mus. Cuming.)

CYCLOSTOMA OBLIGATUM. *Cycl. testâ minutè excavato-umbilicatâ, subglobosâ, solidâ, griseo-albâ; anfractibus convexis, undique spiraliter acutè costatis; aperturâ semilunari, labro simplici.*

THE STRONGLY-BOUND CYCLOSTOMA. Shell minutely excavately umbilicated, nearly globose, solid, grey-white; whorls convex, sharply spirally ribbed throughout; aperture semilunar, lip simple.

GOULD, Expedition Shells, pl. 8. f. 119.

Cyclophorus? obligatus, Pfeiffer.

Hab. Society Islands.

A small shell of solid spirally-ribbed growth.

Species 86. (Mus. Cuming.)

CYCLOSTOMA COSTULATUM. *Cycl. testâ subangustè umbilicatâ, globoso-conoidè, solidiusculâ, griseo-rubellâ; anfractibus spiraliter crebrilatis; aperturâ circulari, labro simplici.*

THE FINELY-RIBBED CYCLOSTOMA. Shell rather narrowly umbilicated, globosely conoid, rather solid, grey-reddish; whorls spirally closely ridged; aperture circular, lip simple.

ZIEGLER, Rossmasler, Icon. Land und Süßw. Moll. vol. vi. p. 49, pl. 28. f. 395.

Cyclostoma Olivieri, Sowerby.

Cyclostoma Syriacum, Ziegler.

Cyclostoma orientale, Rossmasler.

Hab. Hungary; neighbourhood of the Caspian Sea; Syria.

Of a rather depressed globosely-conoid form, simple, spirally ridged throughout.

Species 87. (Mus. Cuming.)

CYCLOSTOMA ZANZIBARICUM. *Cycl. testâ minutè umbilicatâ, globoso-conicâ, fulvescente, infra peripheriam purpureo unifasciatâ; anfractibus convexis, subinflatis, lineis spiralibus subobsoletis cinctis, ultimo circa umbilicum tenuè lirato; aperturâ subcirculari, labro simplici.*

THE ZANZIBAR CYCLOSTOMA. Shell minutely umbilicated, globosely conical, fulvous, one-banded beneath

the periphery, with purple; whorls convex, somewhat inflated, encircled with rather obsolete spiral lines, last whorl finely ridged around the umbilicus; aperture nearly circular, lip simple.

PETIT, Journ. Conch. 1850, p. 53, pl. 3. f. 5.

Hab. Zanzibar.

A light inflated shell of the prevailing Madagascar type.

Species 88. (Mus. Cuming.)

CYCLOSTOMA MICROCHASMA. *Cycl. testâ modicè umbilicatâ, globoso-turbinatâ, depressiusculâ, tenui, stramineâ, infra peripheriam purpureo-rufâ conspicuè unifasciatâ; anfractibus convexis, lineis spiralibus confertis cinctis; aperturâ circulari, labro subrepanso.*

THE MODERATELY-GAPING CYCLOSTOMA. Shell moderately umbilicated, globosely turbinated, rather depressed, thin, straw-coloured, conspicuously one-banded with purple-red below the periphery; whorls convex, encircled with close-set spiral lines; aperture circular, lip a little expanded.

PFEIFFER, Pro. Zool. Soc. 1856, p. 338.

Hab. Madagascar.

A delicately coloured shell, of rather more depressly turbinated growth than generally belongs to this well-known type.

Species 89. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA KIENERI. *Cycl. testâ latè patentè umbilicatâ, depressè orbiculari, subdiscoidè, castaneo-rufâ, albo sparsim articulatâ; anfractibus angustis, juxta suturas subplanulatis, ad peripheriam obscurè angulatis, supra spiraliter validè liratis, infra lævibus; aperturâ obliquè circulari, faucē rufâ, labro subreflexo, margine angulato-producto.*

KIENER'S CYCLOSTOMA. Shell broadly openly umbilicated, depressly orbicular, nearly discoid, chestnut-red, sparsely articulated with white; whorls narrow, rather flattened next the sutures, obscurely angled at the periphery, spirally strongly ridged above, smooth below; aperture obliquely circular, interior red, lip slightly reflected, margin angularly produced.

PFEIFFER, Pro. Zool. Soc. 1854, p. 302.

Hab. Madagascar.

This very characteristic species is probably a *Cyclophorus*. It has little generic relationship with the ordinary Madagascar or West India types of the genus.

Species 90. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA AFRICOMUM. *Cycl. testā subampliter profunde umbilicatā, orbiculari-depressā, sericeo-albā, fulvescente tinctā; anfractibus subangustis, rotundatis, oblique dense lirato-striatis; aperturā oblique ovatā, labro subexpanso.*

THE GOLDEN-HAIR CYCLOSTOMA. Shell rather largely deeply umbilicated, orbicularly depressed, silky-white, tinged with fulvous; whorls rather narrow, rounded, obliquely densely ridge-striated; aperture obliquely ovate, lip slightly expanded.

GUNDLACH, MS. in Mus. Cuming.

Hab. Cuba.

The surface of the whorls is sculptured obliquely with close-set ridge-like striae.

Fig. 91. (Mus. Cuming.)

CYCLOSTOMA CINCINNUS. *Cycl. testā minutā umbilicatā, conico-turbinatā, tenuiculā, albidā, rufo-fusco infra peripheriam angustē unifasciatā; anfractibus convexis, spiraliter confertim lirato-striatis; striis in anfractu ultimo plus minus obsoletis; aperturā circulari, labro tenuē reflexo.*

THE CURL CYCLOSTOMA. Shell minutely umbilicated, conically turbinated, rather thin, whitish, narrowly one-banded beneath the periphery with red-brown; whorls convex, spirally closely ridge-striated, striae more or less obsolete on the last whorl; aperture circular, lip thinly reflected.

SOWERBY, Pro. Zool. Soc. 1843, p. 60.

Hab. Madagascar.

A shell of delicate substance, rather elevately conically turbinated.





CYCLOSTOMA.

PLATE XV.

Species 92. (Mus. Cuming.)

CYCLOSTOMA YALLAHENSE. *Cycl. testā angustē umbilicatā, ovato-turritā, cærulescente-fuscā, spiraliter rufo-punctatā; anfractibus rotundatis, longitudinaliter confertissimè costulato-striatis, striis infra suturas plicatis; aperturā circulari, labro subincrassato, viz reflexo.*

THE YALLAH CYCLOSTOMA. Shell narrowly umbilicated, ovately turreted, blue-brown, spirally dotted with red; whorls rounded, longitudinally very closely rib-striated, striae puckered into folds beneath the sutures; aperture circular, lip rather thickened, scarcely reflected.

ADAMS, Contrib. to Conch. No. 9. p. 156.

Hab. Yallah's Hill, Jamaica.

A rather slender finely dotted form of this very prevalent Jamaica type.

Species 93. (Mus. Cuming.)

CYCLOSTOMA CASTANEUM. *Cycl. testā modicè umbilicatā, globoso-conicā, tenuiculā, nitidè castaneā; anfractibus subangulato-convexis, undique spiraliter liris, liris obtusis, subdistantibus; aperturā circulari, labro viz reflexo.*

THE CHESTNUT CYCLOSTOMA. Shell moderately umbilicated, globosely conical, rather thin, shining-chestnut; whorls somewhat angularly convex, spirally ridged throughout, ridges obtuse, rather distant; aperture circular, lip scarcely reflected.

PFEIFFER, Pro. Zool. Soc. 1851, p. 251.

Hab. Madagascar.

A light sharply-spined shell, of a rich shining chestnut-colour both within and without.

Species 94. (Mus. Cuming.)

CYCLOSTOMA SUBLIRATUM. *Cycl. testā angustē umbilicatā, globoso-conicā, pallidè rubello-corneā; anfractibus rotundatis, spiraliter undique confertim tenuiliris; aperturā circulari, labro simplici, viz reflexo.*

THE FAINTLY-RIDGED CYCLOSTOMA. Shell narrowly umbilicated, globosely conical, pale reddish-horny;

whorls rounded, spirally closely faintly ridged throughout; aperture circular, lip simple, slightly reflected.

PFEIFFER, Pro. Zool. Soc. 1852, p. 65.

Hab. — ?

The habitat of this species is not known, but it appears to be a Madagascar form.

Species 95. (Mus. Cuming.)

CYCLOSTOMA TECTILIFRÆ. *Cycl. testā angustissimè umbilicatā, ovato-turritā, sericeo-fuscescente, spiraliter rufo-punctatā; anfractibus rotundatis, longitudinaliter confertim tenuissimè lirato-striatis; aperturā rotundatā, labro simplici.*

THE COVERED-LIP CYCLOSTOMA. Shell very narrowly umbilicated, ovately turreted, silky pale-brown, spirally dotted with red; whorls rounded, longitudinally closely very finely ridge-striated; aperture rounded, lip simple.

ADAMS, Contrib. to Conch. No. 1. p. 10.

Hab. Jamaica.

The longitudinal laminar striae are very fine, and present only a very faint indication of the puckering beneath the suture common to this type.

Fig. 96. (Mus. Cuming.)

One of the numerous varieties of the European *C. sulcatum*, described and figured at Plate XI. Sp. 66, of which at least ten species have been made by different authors. In the present variety the spiral ridges are broad, separated from each other by deep-cut linear grooves.

Species 97. (Mus. Cuming.)

CYCLOSTOMA CAROLINENSIS. *Cycl. testā angustē subprofundè umbilicatā, pyramidal-conicā, cærulescente-albā, nitidulā; anfractibus rotundatis, superne leviter et confertim spiraliter liris, deinde lævibus; aperturā subcirculari, labro simplici, viz reflexo.*

THE CAROLINE CYCLOSTOMA. Shell narrowly rather deeply umbilicated, pyramidally conical, bluish-

white, shining; whorls rounded, lightly and closely spirally ridged at the upper part, then smooth; aperture nearly circular, lip simple, slightly reflected.

PFEIFFER, Pro. Zool. Soc. 1852, p. 65.

Hab. Caroline Islands, North Pacific.

Distinguished by having the upper part of the whorls faintly spirally ridged, while the middle and lower parts are smooth.

Species 98. (Mus. Cuming.)

CYCLOSTOMA BANKSIANUM. *Cycl. testā angustissimè umbilicatā, ovato-turritā, cinereo-griseā, ferrugineo-rufa interdum tinctā; anfractibus rotundatis, longitudinaliter laminari-liratis, liris subdistantibus, ad suturas plicatis, interstitiis densè minutè reticulatis; aperturā circulari, labro tenni, subreflexo.*

BANKS' CYCLOSTOMA. Shell very narrowly umbilicated, ovately turreted, ash-grey, sometimes tinged with rust-red; whorls rounded, longitudinally laminarily ridged, ridges rather distant, puckered at the sutures, interstices densely minutely reticulated; aperture circular, lip thin, slightly reflected.

SOWERBY, Thesaurus Conch. p. 144. pl. 29. f. 194.

Hab. Jamaica.

In this variety of the puckered type the rib-like striæ are enlarged into laminar ridges and widely separated, the interstices being densely reticulated.

Species 99. (Mus. Cuming.)

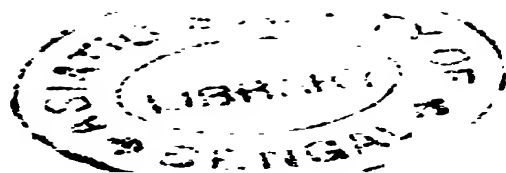
CYCLOSTOMA FASCICULARE. *Cycl. testā angustissimè umbilicatā, ovato-turritā, fuscescente subsericeā; anfractibus rotundatis, longitudinaliter confertissimè capillaceo-striatis, striis ad suturas fasciculato-plicatis; aperturā subobliquè ovatā, labro plano-fimbriato.*

THE FASCICULATED CYCLOSTOMA. Shell very narrowly umbilicated, ovately turreted, pale-brown, somewhat silky; whorls rounded, longitudinally very closely hair-striated, striæ fasciculately plicated at the sutures; aperture rather obliquely ovate, lip flatly fimbriated.

PFEIFFER, Pro. Zool. Soc. 1851, p. 245.

Hab. ———?

The habitat of this species is not given, but it is of the well-known Jamaica type, the longitudinal striæ being as fine as hairs.





'CYCLOSTOMA.

PLATE XVI.

Species 100. (Mus. Cuming.)

CYCLOSTOMA NOVÆ-HIBERNIÆ. *Cycl. testâ minutè profundè umbilicatâ, acutè turbinatâ, rufulâ; anfractibus subangustis, rotundatis, lævibus; aperturâ circulari, labro tenuè dilatato, marginibus subalatis.*

THE NEW IRELAND *CYCLOSTOMA*. Shell minutely deeply umbilicated, sharply turbinated, red; whorls rather narrow, rounded, smooth; aperture circular, lip thinly dilated, margins somewhat winged.

QUOY and GAIMARD, Zool. Voy. de l'Astrolabe, vol. ii. p. 182. pl. 12. f. 15 to 19.

Cyclostoma vitreum, Sowerby.

Hab. Port Carteret, New Ireland.

A sharply turbinated smooth species of a peculiar orange-red hue.

Species 101. (Mus. Cuming.)

CYCLOSTOMA GRATUM. *Cycl. testâ minutè profundè umbilicatâ, ovato-turritâ, solidiusculâ, aurantio-carneâ, nitidulâ; anfractibus convexis, undique subtilissimè subobsolete spiralliter liris; aperturâ circulari, fauce vividè aurantio-rufâ, labro simplici, albo, supernè sinuato.*

THE WELCOME *CYCLOSTOMA*. Shell minutely deeply umbilicated, ovately turreted, rather solid, orange-flesh-coloured, shining; whorls convex, everywhere very finely obsolete spirally ridged; aperture circular, interior bright orange-red, lip simple, white, sinuated at the upper part.

PETIT, Journ. Conch. vol. i. p. 53. pl. 3. f. 10.

Hab. Island of Abd-el-Goury.

A very characteristic strikingly coloured little species.

Species 102. (Mus. Cuming.)

CYCLOSTOMA LEVE. *Cycl. testâ minutè umbilicatâ, turbinatâ, pellucido-corneâ, rubellâ; anfractibus convexis, lævibus; aperturâ circulari, subamplâ, labro tenui, subdilatato.*

THE LIGHT *CYCLOSTOMA*. Shell minutely umbilicated, turbinated, transparent-horny, reddish; whorls convex, smooth; aperture circular, rather large, lip thin; slightly dilated.

PFEIFFER, Pro. Zool. Soc. 1855, p. 118.

Hab. Solomon's Island.

A smooth semi-transparent reddish-horny shell.

Fig. 103. (Mus. Cuming.)

This very delicate and pretty shell is Professor C. B. Adams' *C. nitens*, which is regarded as a variety of *C. Augusta*, and will be described under that species.

Species 104. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA FUSCULUM. *Cycl. testâ subampliter umbilicatâ, abbreviato-turbinatâ, pellucido-fusculâ, infra peripheriam purpureo-unifasciatâ; anfractibus declinè convexis, undique spiralliter striatis et piloso-carinatis, carinis albidis; aperturâ obliquè circulari, subamplâ, labro expanso-reflexo, albedo, marginibus sublaminatis.*

THE BROWN *CYCLOSTOMA*. Shell rather largely umbilicated, shortly turbinated, transparent-brown, one-banded with purple below the periphery; whorls slopingly convex, everywhere spirally striated and thread-keeled, keels whitish; aperture obliquely circular, rather large, lip expandedly reflected, whitish, margins slightly laminated.

PFEIFFER, Pro. Zool. Soc. 1851, p. 251.

Hab. — ?

A beautifully defined species of a bright semi-transparent-brown colour, encircled with fine glassy-white thread-like keels.

Species 105. (Mus. Cuming.)

CYCLOSTOMA SULCULOSUM. *Cycl. testâ angustissimè umbilicatâ, oblongo-turritâ, opaco-albâ, carneo-tinctâ, solidiusculâ, spirâ papillari-truncatâ; anfractibus convexis, spiralliter undique confertim liris, liris striis longitudinalibus capillaceis minutissimè decoratis, suturis subobscurè plicato-crenatis; aperturâ parvâ, obliquâ, labro fimbriato, marginibus subalatis.*

THE GROOVED *CYCLOSTOMA*. Shell very narrowly umbilicated, oblong-turreted, opaque-white, tinged with flesh-colour, rather solid, spire papillary truncated; whorls convex, spirally closely ridged throughout,

ridges very minutely decussated with longitudinal hair striae, sutures somewhat obscurely plicately crenated; aperture small, oblique, lip frilled, margins slightly winged.

FÉRUSSEAC, Küster, Conch. Cab. pl. 41. f. 15, 17.

Cyclostoma suturale, Férussac.

Hab. Guadeloupe.

As may be gathered from the foregoing description, there is a great deal of well-defined character in this species.

Species 106. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA LIGATULUM. *Cycl. testā minutè umbilicatā, conico-turbinatā, carneo-albidā, rufo-fusco subtiliter lineatā et unifasciatā; anfractibus convexis, superne minutè subobsolete spiraliter latis, deinde laevibus; aperturā circulari, labro simplici.*

THE FINELY-BOUND CYCLOSTOMA. Shell minutely umbilicated, conically turbinated, flesh-white, finely lineated and one-banded with red-brown; whorls convex, minutely rather obsoletely spirally ridged at the upper part, then smooth; aperture circular, lip simple.

GRATELOUP, Act. Soc. Linn. de Bordeaux, vol. xi. p. 445. pl. 3. f. 20.

Hab. Madagascar.

M. Grateloup is mistaken in saying that this species is not grooved anywhere. There are grooves and corresponding ridges round the upper part of the whorls, but they are extremely faintly indicated.

Species 107. (Mus. Cuming.)

CYCLOSTOMA TENUE. *Cycl. testā minutè umbilicatā, conico-turbinatā, fulvā, rufescente multifasciatā. fasciæ purpureæ infra peripheriam; anfractibus convexis, ventricosiusculis, laevibus, superne substriatis; aperturā circulari, labro simplici.*

THE THIN CYCLOSTOMA. Shell minutely umbilicated, conically turbinated, fulvous, many-banded with pale-red, with a purple band beneath the periphery; whorls convex, rather ventricose, smooth, finely striated round the upper part; aperture circular, lip simple.

SOWERBY, Thesaurus Conch. p. 138. pl. 31. f. 265.

Hab. Africa.

It is a little doubtful whether this and the preceding are not varieties of the same species.



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119



120



121



122



123



124



126

CYCLOSTOMA.

PLATE XVII.

Species 108. (Mus. Cuming.)

CYCLOSTOMA HONESTUM. *Cycl. testā obteclē umbilicatā, oblongo-turritā, albidā, ferrugineo tinctā; anfractibus angustis, rotundatis, longitudinaliter confertissimè lamello-striatis, striis ad suturas plicato-excurrentibus; aperturā parvā, obliquè rotundatā, labro concavo-dilatato, utrinque subauriculato, superne ad suturam nodulato.*

THE NEAT CYCLOSTOMA. Shell with a covered umbilicus, oblong-turreted, whitish, tinged with rust; whorls narrow, rounded, longitudinally very closely lamellarly striated, striae plicately excurrent at the sutures; aperture small, obliquely rounded, lip concavely dilated, slightly auriculated on each side, noded at the upper part in the suture.

POEY, Mem. Cuba, vol. i. p. 103. pl. 7. f. 1-4.

Ctenopoma honestum, Pfeiffer.

Hab. Cuba.

The longitudinal striae are like fine hair-lamellae, rising a little at the sutures.

Species 109. (Mus. Cuming.)

CYCLOSTOMA ROTUNDATUM. *Cycl. testā vix umbilicatā, oblongo-turritā, pellucido-albā; anfractibus rotundatis, spiritaliter obscure liris, longitudinaliter dense subtilissimè capillaceo-striatis; aperturā parvā, rotundatā, labro plano-dilatato.*

THE ROUNDED CYCLOSTOMA. Shell scarcely umbilicated, oblong-turreted, transparent-white; whorls rounded, spirally obscurely ridged, longitudinally densely very finely hair-striated; aperture small, round, lip flatly dilated.

POEY, Mem. Cuba, vol. i. p. 419. pl. 34. f. 19-21.

Ctenopoma rotundatum, Pfeiffer.

Hab. Cuba.

The longitudinal sculpture is in this species of the finest possible character, but still with a tendency to lamella structure.

Species 110. (Mus. Cuming.)

CYCLOSTOMA WILKINSONII. *Cycl. testā angustè umbilicatā, cylindraceo-turritā, semipellucido-albā; anfrac-*

tibus angustis, rotundatis, longitudinaliter subtiliter lamellato-striatis, striis ad suturas modicè plicato-excurrentibus, anfractu ultimo subsulato; aperturā parvā, rotundatā, labro fimbriato-dilatato.

WILKINSON'S CYCLOSTOMA. Shell narrowly umbilicated, cylindrically turreted, semitransparent-white; whorls narrow, rounded, longitudinally finely lamellarly striated, striae moderately plicately excurrent at the sutures, last whorl partially unrolled; aperture small, rounded, lip fimbriately dilated.

ADAMS, Contrib. to Conch. No. 1. p. 6.

Cyclostoma modestum, Adams.

Hab. Jamaica.

Another very delicately lamella-striated species, more narrowly convoluted than the preceding, with the last whorl partially unrolled next the aperture.

Species 111. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA RUGULOSUM. *Cycl. testā angustè umbilicatā, cylindraceo-turritā, pellucido-albā; anfractibus rotundatis, striis spiritalibus et longitudinalibus undique confertim exquisitè lamellato-clathratis, striis hic illic ad suturas plicatis; aperturā oratā, labro subexpanso.*

THE RUGULOSE CYCLOSTOMA. Shell narrowly umbilicated, cylindrically turreted, transparent-white; whorls rounded, closely exquisitely latticed throughout with spiral and longitudinal lamellar striae, striae here and there plicated at the sutures; aperture ovate, lip slightly expanded.

PFEIFFER, in Wiegman. Arch. f. Nat. 1839, p. 356.

Cyclostoma clathratum, Gould.

Cyclostoma reverendum, Poey.

Cyclostoma denegatum, Poey.

Cistula rugulosa, Gray.

Hab. Cuba.

The last whorl inclines to become detached from the body-whorl on reaching maturity.

Species 112. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA DOMINICENSE. *Cycl. testā angustissimè umbilicatā, cylindraceo-turritā, solidiusculā, albidā; anfractibus obscure spiritaliter liris, longitudinaliter*

confertissimè lamellato-striatis, striis ad suturas plicato-excurrentibus; aperturâ parvâ, rotundatâ, labro tenuè dilatato, duplici.

THE DOMINGO CYCLOSTOMA. Shell very narrowly umbilicated, cylindrically turreted, rather solid, whitish; whorls obscurely spirally ridged, longitudinally very closely lamella-striated, striæ plicately excurrent at the sutures; aperture small, rounded, lip thin, dilated, duplex.

PFFIFFER, Zeitschr. für Malac. 1850, p. 79.

Hab. St. Domingo.

This species may be recognized more by its size and general aspect; the details of sculpture are not very distinctive.

Species 113. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA NODULATUM. *Cycl. testâ angustè umbilicatâ, cylindraceo-turritâ, pellucido-albâ; anfractibus subangustis, rotundatis, longitudinaliter conspicuè confertim lamellato-striatis, striis hic illic majoribus, ad suturas subexcurrentibus; aperturâ parvâ, labro tenuè dilatato, duplici, supernè nodulato.*

THE NODULED CYCLOSTOMA. Shell narrowly umbilicated, cylindrically turreted, transparent-white; whorls rather narrow, rounded, longitudinally conspicuously closely lamellarly striated, striæ here and there larger, slightly excurrent at the sutures; aperture small, lip thinly dilated, duplex, noded at the upper part.

POEY, Mem. Cuba, vol. i. f. 104. pl. 5. f. 21.

Ctenopoma rugulosum, var. Pfeiffer.

Hab. Cuba.

This is certainly distinct, as shown by the accompanying figures, from what I am led to believe is the type of *C. rugulosum*. It is a smaller more loosely convoluted shell, with the striæ more developed in lamellæ.

Species 114. (Mus. Cuming.)

CYCLOSTOMA SOLIDUM. *Cycl. testâ vix umbilicatâ, cylindraceo-turritâ, albâ; anfractibus angustis, convexis, liris spiralibus regulariter funiculatis, interstitiis striis longitudinalibus clathratis; aperturâ obliquè ovatâ, labro solido, parum expanso.*

THE SOLID CYCLOSTOMA. Shell scarcely umbilicated, cylindrically turreted, white; whorls narrow, convex, regularly corded with spiral ridges, the interstices being latticed with longitudinal striæ; aperture obliquely ovate, lip solid, but little expanded.

Truncatella solida, Menke, Synops. ed. 2. p. 131.

Cyclostoma solidum, Pfeiffer.

Hab. — ?

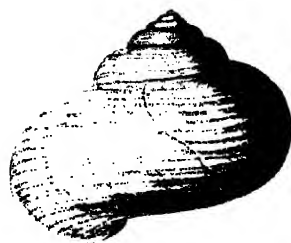
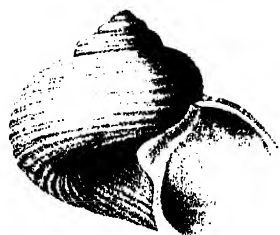
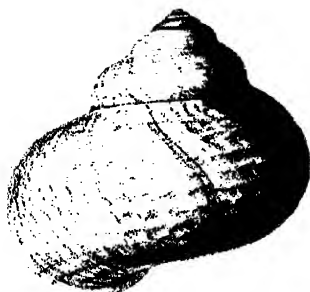
This species, of which little is as yet known, has somewhat the appearance of a *Truncatella*, and was originally mistaken for that genus by Menke. Its finely spiral cord-like ridges are characteristic.



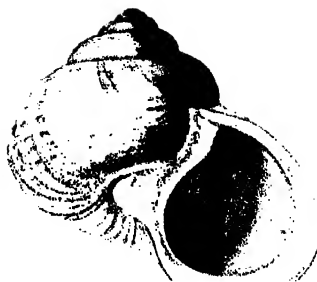
115.



116 b



118 b.



119 a



119 b



120

CYCLOSTOMA

PLATE XVIII.

Species 115. (Mus. Cuming.)

CYCLOSTOMA HEMASTOMA. *Cycl. testā angustè excavato-umbilicatā, conico-globosā, solidā, cineriscente-carneā, infra peripheriam purpureo unifasciatā, anfractibus rotundatis, spiritaliter undique densè acutè liris et sulcatis, ad suturas impressis; aperturā parvisculā, rotundatā, fauce purpureo-rufā, labro vix reflexo.*

THE RED-MOUTH CYCLOSTOMA. Shell narrowly excavately umbilicated, conically globose, solid, ash-flesh colour, encircled with a purple band beneath the periphery, whorls rounded, spirally densely sharply ridged and grooved throughout, impressed at the sutures; aperture rather small, rounded, interior purple-red, lip scarcely reflected.

ANTON, Verzeichn. p. 54.

Otomoma hemastoma, Gray.

Hab. Round Island, Mauritius; Robil

A rather solid shell, sharply densely ridged and grooved throughout. The umbilicus is also ridged.

Species 116. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA CLATHRATULUM. *Cycl. testā subampliter umbilicatā, depressè globosā, crassiusculā, fusciscente-carneā vel albā, violaceo-cinereo interdum obscurè lineatā et fasciatā, anfractibus rotundatis, undique malleatis et tenuè clathratis; aperturā parvisculā, fauce pallidè aurantiā, labro simplici, subincrassato.*

THE LATTICED CYCLOSTOMA. Shell rather largely umbilicated, depressly globose, rather thick, brownish-flesh-colour or white, sometimes obscurely lineated and banded with violet-ash, whorls rounded, malleated and finely latticed throughout; aperture rather small, interior pale orange, lip simple, rather thickened.

RECLUZ, Revue Zool. Soc. Cuv. 1843, p. 3.

Otopoma clathratulum, Pfeiffer.

Hab. Yemen, Arabia; Sowerby. Socotra; Recluz.

The surface of this shell is very densely closely latticed, and it is also malleated in the manner so peculiarly characteristic of the section *Otopoma*, to which it belongs.

Species 117. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA NATICOIDES. *Cycl. testā oblectè umbilicatā, obliquè globosā, crassā, roseo-albā, anfractibus con-*

vexis undique conspicuè rugoso-malleatis et subtilissimè clathratis, ultimo subinflato; aperturā obliquè subpyriformi, fauce aurantio-vitellinā, labro callosa-incrassato, parum reflexo, callo amplo, super umbilicum expanso.

THE NATICA-LIKE CYCLOSTOMA. Shell with a covered umbilicus, obliquely globose, thick, rose-white, whorls convex, conspicuously rugosely malleated and very finely latticed throughout, last whorl slightly inflated; aperture obliquely pear-shaped, interior orange-yellow colour, lip callously thickened, but little reflected, with a large callosity spread over the umbilicus.

RECLUZ, Revue Zool. Soc. Cuv. 1843, p. 3.

Otopoma naticoides, Pfeiffer.

Otopoma foliaceum, Gray (not *Turbo foliaceus*, Chemnitz).

Hab. Island of Socotra.

This well-known species, as I have shown under *Cyclophorus*, Plate XIII. Sp. 52, is not the *Turbo foliaceus* of Chemnitz.

Species 118. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA AURICULARE. *Cycl. testā ampliter perspersitè umbilicatā, globoso-turbinatā, tenuiculā, intus extusque albā, anfractibus declivi-rotundatis, liris obtusis sulcisque spiralibus densè irregulariter sculptis; aperturā pyriformi-rotundatā, labro subreflexo, versus umbilicum laminato-expanso.*

THE EARED CYCLOSTOMA. Shell largely perspectivevly umbilicated, globosely turbinated, rather thin, white within and without, whorls slopingly rounded, densely irregularly sculptured with obtuse ridges and spiral grooves; aperture pyriformly rounded, lip a little reflected, luminately expanded towards the umbilicus.

GRAY, in Griffith's Cuv. Anim. King. pl. 28. f. 5.

Cyclostoma candidum, Sowerby.

Cyclophora auricularis, Swainson.

Otopoma auriculare, Gray.

Hab. —?

A shell of very much lighter structure than the preceding, having the whorls more freely turbinated, with no appearance of malleation upon the surface.

Species 119. (Fig. *a*, *b*, Mus. Cuming.)

CYCLOSTOMA PHILIPPIANUM. *Cycl. testā subangustè umbilicatā, globosā, tenuiculā, albidā, fasciis duabus rufescentibus distantibus cingulatā, anfractibus rotundatis, subinflatis, undique submalleatis et densissimè clathratis; aperturā pyriformi-rotundatā, labro tenuè reflexo.*

PHILIPPI'S CYCLOSTOMA. Shell rather narrowly umbilicated, globose, rather thin, whitish, encircled with two distant reddish bands, whorls rounded, a little inflated, slightly malleated and very densely latticed throughout; aperture pyriformly rounded, lip thinly reflected.

PFEIFFER, Küster, Conch. Cab. pl. 44. f. 23, 24.

Otopoma Philippianum, Pfeiffer.

Turbo ligatus pars, Chemnitz.

Cyclostoma ligatum, Sowerby.

Hab. — ?

A light subinflated shell, in which the upper of the two distant reddish bands is lined.

Species 120. (Mus. Cuming.)

CYCLOSTOMA ALBICANS. *Cycl. testā subampliter perspective umbilicatā, depresso-globosā, albidā, nitente, anfractibus rotundatis, subangustis, lævibus, sulcis linearibus spiralibus undique creberrimè sculptis, sublus malleatis; aperturā parvisculā, pyriformi-rotundatā, labro subincrassato, viz reflexo.*

THE WHITE CYCLOSTOMA. Shell rather largely perspective umbilicated, depressly globose, white, shining, whorls rounded, rather narrow, smooth, very closely sculptured throughout with spiral linear grooves, malleated beneath; aperture rather small, pyriformly rounded, lip rather thickened, scarcely reflected.

SOWERBY, Thes. Conch. f. 104, 105.

Otopoma albicans, Gray.

Hab. Island of Haina, South China; Benson.

Very closely resembling *C. auriculare*, but of more solid growth, irrespective of a difference of form.





121.



122.a.



122.b.



123.



124.



126.



125.



127.b.



128.

CYCLOSTOMA.

PLATE XIX.

Species 121. (Mus. Cuming.)

CYCLOSTOMA PYGMÆUM. *Cycl. testā angustè subprofundè umbilicatā, globoso-conicā, fusco-albidā, anfractibus rotundatis, subconfertim tenuiliratis; aperturā rotundatā, labro simplici.*

THE PYGMY CYCLOSTOMA. Shell narrowly rather deeply umbilicated, globosely conical, brownish-white, whorls rounded, rather closely finely ridged; aperture rounded, lip simple.

SOWERBY, Thes. Conch. p. 104. pl. 3. f. 253.

Otopoma pygmæa, Gray.

Hab. New Ireland.

A small species, magnified in our figure to seven or eight times the natural size.

Species 122. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA CLAUSUM. *Cycl. testā oblectè umbilicatā, depressè orbiculatā, albidā, interdum rufo unifasciatā, anfractibus paucis, angustis, rapidè accrescentibus, spiraliter tenuiliratis, liris interdum subobsolete; aperturā obliquè rotundatā, labro calloso-reflexo, callositate super umbilicem expansā.*

THE CLOSED CYCLOSTOMA. Shell with a covered umbilicus, depressely orbicular, whitish, sometimes encircled by a single red band, whorls few, narrow, rapidly increasing, spirally finely ridged, ridges sometimes rather obsolete; aperture obliquely rounded, lip callously reflected, with a callosity expanded over the umbilicus.

SOWERBY, Thes. Conch. p. 128. pl. 31. f. 266, 267.

Otopoma clausum, Gray.

Hab. Yemen, Arabia; Powis.

A rather depressed species, with the umbilicus entirely closed by the expansion of a white callosity.

Species 123. (Mus. Cuming.)

CYCLOSTOMA LISTERI. *Cycl. testā suboblectè umbilicatā, globoso-conicā, carneo-albidā, infra peripheriam obscurè fasciatā; anfractibus declivi-convexis, lævibus; aperturā obliquè rotundatā, labro viz reflexo.*

LISTER'S CYCLOSTOMA. Shell with a nearly covered umbilicus, globosely conical, flesh-white, obscurely

banded below the periphery, whorls slopingly convex, smooth; aperture obliquely rounded, lip scarcely reflected.

GRAY, Ann. Phil. 1821.

Cyclostoma Philippi, Grateloup.

Otopoma Listeri, Gray.

Hab. Mauritius.

Of very simple character, peculiarly conically globose in form.

Species 124. (Mus. Cuming.)

CYCLOSTOMA MULTILINEATUM. *Cycl. testā suboblectè umbilicatā, globoso-convexā, solidā, cinnamomeo-rufo, spiraliter multilinatā, opaco-albo longitudinaliter interruptè strigatā, anfractibus convexis, longitudinaliter rugato-striatis; aperturā obliquè rotundatā, labro calloso-reflexo, albo, flexuoso.*

THE MANY-LINED CYCLOSTOMA. Shell with a nearly covered umbilicus, globosely conical, solid, cinnamon-red, spirally many-lined, longitudinally interruptedly streaked with opake-white, whorls convex, longitudinally wrinkle-striated; aperture obliquely rounded, lip callously reflected, white, flexuous.

JAY, Cat. of Shells, 1859, p. 123. pl. 7. f. 12, 13.

Cyclostoma flexilabrum, Sowerby.

Cyclostoma flavilabre, Petit.

Tropidophora flexilabrum, Gray.

Otopoma multilineatum, Pfeiffer.

Hab. Madagascar; Petit.

The spiral lines of this species are formed by the interruption of the longitudinal opake-white striae.

Species 125. (Mus. Cuming.)

CYCLOSTOMA POLITUM. *Cycl. testā subangustè umbilicatā, conico-globosā, crassiusculā, rufo-castaneā, albo obscurè lentiginosā, anfractibus declivi-convexis, lævibus, politis; aperturā rotundatā, labro simplici, subcallomo, albo.*

THE POLISHED CYCLOSTOMA. Shell rather narrowly umbilicated, conically globose, rather thick, reddish-chestnut, obscurely freckled with white, whorls slopingly convex, smooth, polished; aperture rounded, lip simple, slightly callous, white.

SOWERBY, Thes. Conch. p. 97. pl. 23. f. 17.

Otopoma politum, Gray.

Hab. — ?

Of a deep reddish-chestnut colour, obscurely reticulately freckled with white.

Species 126. (Mus. Cuming.)

CYCLOSTOMA GUELLAINI. *Cycl. testā oblectē umbilicatā, pyramidaliglobosā, solidiusculā, cærulescente-albā, opacā, anfractibus rotundatis, longitudinaliter obliquè plicato-striatis, spiraliter malleatis et subtilissimè liris; aperturā subpyriformi-rotundatā, fovea aurantio-rotellinā, fasciatā, labro callosa-reflexo, callositate super umbilicem latè expansā.*

GUELLAIN'S CYCLOSTOMA. Shell with a covered umbilicus, pyramidally globose, rather solid, bluish-white, opaque, whorls rounded, longitudinally obliquely plicately striated, spirally malleated and very finely ridged; aperture somewhat pyriformly rounded, interior orange-yell colour, banded, lip callously reflected, with a callosity widely expanded over the umbilicus.

PETIT, Journ. Conch. 1850, vol. i. p. 51. pl. 4. f. 3.

Hab. Mogadore, North Africa.

A very characteristic species, allied to the large *C. Nataloides*, which is a native of South Africa.

Species 127. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA COMORENSE. *Cycl. testā minutè oblectē umbilicatā, ovato-conicā, solidā, rufo-castanea tinctā et lineatā, anfractibus convexis, longitudinaliter densè*

capillaceo-striatis et rugatis; aperturā subpyriformi-rotundatā, labro simplici, calloso, subflexuoso.

THE COMORO CYCLOSTOMA. Shell with a minute covered umbilicus, ovately conical, solid, stained and lineated with reddish-chestnut, whorls convex, longitudinally densely hair-striated and wrinkled; aperture somewhat pyriformly rounded, lip simple, callous, rather flexuous.

PFEIFFER, Pro. Zool. Soc. 1854, p. 151.

Otopoma Comorensis, Pfeiffer.

Hab. Comoro Islands, Africa.

Allied, in details of colour and striation, to *C. multineatum*, but of a more slenderly conical form.

Species 128. (Mus. Cuming.)

CYCLOSTOMA VITELLINUM. *Cycl. testā subangustè umbilicatā, conica-turbinatā, rubello-flavā, apice nigrescente, anfractibus declivi-rotundatis, spiraliter densè liris, interstitiis striis obliquis cancellatis; aperturā subpyriformi-rotundatā, labra simplici.*

THE YELK-YELLOW CYCLOSTOMA. Shell rather narrowly umbilicated, conically turbinated, reddish-yellow, blackish at the apex, whorls slopingly rounded, spirally densely ridged, interstices cancellated with oblique striae; aperture somewhat pyriformly rounded, lip simple.

PFEIFFER, Pro. Zool. Soc. 1851.

Otopoma vitellinum, Pfeiffer.

Hab. Madagascar.

Turbinated with a rather sharply conical spire, densely ridged, the interstices being minutely cancellated.



132.



135.



136.



137.



138.



139.



140.



141.

CYCLOSTOMA.

PLATE XX.

Species 129. (Mus. Cuming.)

CYCLOSTOMA CHITTYI. *Cycl. testâ modicè umbilicatâ, globoso-turbinatâ, fulvo-albidâ, interdum lineis rufis obsoletè cinctâ, anfractibus rotundatis, confertissimè decussatim scabris, suturâ profundâ; aperturâ circulari, labro latè imbricato-fimbriato.*

CHITTY'S CYCLOSTOMA. Shell moderately umbilicated, globosely turbinated, fulvous-white, sometimes obsoletely encircled with red lines, whorls rounded, very closely decussately scabrous, suture deep; aperture circular, lip broadly imbricately frilled.

ADAMS, Contr. to Conch. No. 1. p. 1, and No. 6. p. 89.

Choanopoma Chittyi, Pfeiffer.

Hab. Jamaica.

Very closely decussately scabrous, sometimes encircled with faint red lines.

Species 130. (Mus. Cuming.)

CYCLOSTOMA MITE. *Cycl. testâ modicè umbilicatâ, globoso-turbinatâ, subabbreviatâ, fulvescente-albâ, semipellucidâ, anfractibus subangustis, rotundatis, liris membranaceis densissimè scabroso-decussatis; aperturâ circulari, parvâ, labro modicè imbricato-fimbriato.*

THE RIPE CYCLOSTOMA. Shell moderately umbilicated, globosely turbinated, rather short, fulvous-white, semitransparent, whorls rather narrow, rounded, very densely scabrously decussated with membranaceous ridges; aperture circular, small, lip moderately imbricately frilled.

PFEIFFER, Pro. Zool. Soc. 1852, p. 63.

Choanopoma mite, Pfeiffer.

Hab. Jamaica.

Of a more shortly turbinated form than the preceding species, with a smaller and more narrowly-frilled aperture.

Species 131. (Mus. Cuming.)

CYCLOSTOMA SPINULOSUM. *Cycl. testâ modicè umbilicatâ, globoso-turbinatâ, sordidè albâ, fusco irregulariter strigatâ et fasciatâ, anfractibus rotundatis, densissimè scabrè imbricato-clathratis; aperturâ circulari, parvâ, labro modicè imbricato-fimbriato.*

THE FINELY-SPINED CYCLOSTOMA. Shell moderately umbilicated, globosely turbinated, dull-white, irregularly

streaked and banded with brown, whorls rounded, very densely scabrously imbricately latticed; aperture circular, small, lip moderately imbricately frilled.

ADAMS, Contr. to Conch. No. 1. p. 1.

Choanopoma spinulosum, Pfeiffer.

Hab. Jamaica.

The fine decussating ridges are more laminated in this species, and have a somewhat spinulose character at the point of crossing.

Species 132. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA PULCHRUM. *Cycl. testâ subampliter excavato-umbilicatâ, globoso-turbinatâ, ferrugineo-fulvâ, fuscescente obscure maculatâ, anfractibus rotundatis, spiritaliter undique filoso-carinatis, longitudinaliter confertissimè scabroso-striatis; aperturâ circulari, labro latissimè imbricato-fimbriato.*

THE BEAUTIFUL CYCLOSTOMA. Shell rather largely excavately umbilicated, globosely turbinated, rusty-fulvous, obscurely spotted with light-brown, whorls rounded, spirally thread-keeled throughout, longitudinally very closely scabrously striated; aperture circular, lip very broadly imbricately frilled.

Turbo pulcher, Wood, Index Test. Supp. p. 36. pl. 6. f. 4.

Cyclostoma pulchrum, Gray.

Choanopoma pulchrum, Pfeiffer.

Hab. Jamaica.

This very beautiful and well-known species is the type of Dr. Pfeiffer's genus *Choanopoma*, the species of which are grouped in this and the two succeeding plates. They are all natives of the West Indies, chiefly Jamaica and Cuba.

Species 133. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA FIMBRIATULUM. *Cycl. testâ subampliter umbilicatâ, globoso-turbinatâ, depressiusculâ, semipellucido-albâ, anfractibus subangustis, rotundatis, spiritaliter confertim carinato-liratis, striis longitudinalibus laminato-scabrosis, densissimè decussatis; aperturâ circulari, labro latè imbricato-fimbriato.*

THE DELICATELY-FRILLED CYCLOSTOMA. Shell rather largely umbilicated, globosely turbinated, somewhat depressed, semitransparent-white, whorls rather narrow, rounded, spirally closely keel-ridged, very densely

crossed with longitudinal laminately scabrous striæ;
aperture circular, lip broadly imbricately frilled.

SOWERBY, Tankerville Cat. App. p. 8.

Choanopoma fimbriatulum, Pfeiffer.

Annularia fimbriata, Schumacher.

Hab. Jamaica.

Remarkable for its extremely delicate fluted sculpture,
densely scabrous throughout with overcrossing striæ.

Species 134. (Mus. Cuming.)

CYCLOSTOMA BLANDIANUM. *Cycl. testâ angustè umbilicatâ, oblongo-turbinatâ, subpellucido-albâ, rufo-fusco subremotè interruptè fasciatâ, anfractibus rotundatis, lineis elevatis spiralibus, striis scabrosis densè decussatis exsculptis; aperturâ parvisculâ, labro latè fimbriato, fimbriâ subimbricatâ.*

BLAND'S CYCLOSTOMA. Shell narrowly umbilicated, oblong-turbinated, subpellucid-white, rather distantly interruptedly banded with red-brown, whorls rounded, sculptured with spiral raised lines densely crossed by scabrous striæ; aperture rather small, lip broadly frilled, frill slightly imbricated.

ADAMS, Contr. to Conch. No. 1. p. 3.

Choanopoma lima, var., Pfeiffer.

Hab. Jamaica.

This appears to me to be distinct from *C. lima*. It is a more delicate shell, neatly encircled with rather distant interrupted linear red bands, and the frill is lightly puckered.

Species 135. (Mus. Cuming.)

CYCLOSTOMA LINCINA. *Cycl. testâ angustè umbilicatâ, subabbreviato-turbinatâ, violaceâ vel carneo-albâ, anfractibus rotundatis, lineis spiralibus elevatis, striis spinoso-scabrosis densè decussatis exsculptis; aperturâ*

circulari, parvâ, latè plano-fimbriato, fimbriâ ad marginem spinosâ.

THE CORDED CYCLOSTOMA. Shell narrowly umbilicated, rather shortly turbinated, violaceous or flesh-white, whorls rounded, sculptured with spiral raised lines, densely crossed by spinously scabrous striæ; aperture circular, small, broadly flatly frilled, frill spinous the edge.

Turbo lincina, Linnæus, Syst. Nat. 10th edit. p. 765.

Nerita lincina, Müller.

Cyclostoma lincina, Deshayes.

Choanopoma lincina, Pfeiffer.

Hab. Jamaica.

The scabrous striæ of this species are rather spinous at the point of crossing.

Species 136. (Mus. Cuming.)

CYCLOSTOMA SCABRICULUM. *Cycl. testâ subcompressè umbilicatâ, abbreviato-turbinatâ, fulvido-albâ, anfractibus rotundatis, lineis spiralibus elevatis, striis scabrosis densè decussatis exsculptis, ultimo dilatato-producto; aperturâ circulari, parvâ, labro latè imbricato-fimbriato.*

THE SCABROUS CYCLOSTOMA. Shell rather compressly umbilicated, shortly turbinated, fulvous-white, whorls rounded, sculptured with spiral raised lines, densely crossed by scabrous striæ, last whorl dilutely produced; aperture circular, small, lip broadly imbricately frilled.

SOWERBY, Thes. Conch. p. 133. pl. 28. f. 117.

Cyclostoma anabile, Adams.

Choanopoma scabriculum, Pfeiffer.

Hab. Jamaica.

There is scarcely any variation between the sculpture of this and the preceding species, but the form is different, the last whorl being dilutely produced.





138.



137.



139.



140.



141. b.



142. b.



143.

CYCLOSTOMA.

PLATE XXI.

Species 137. (Mus. Cuning.)

CYCLOSTOMA LINCINELLUM. *Cycl. testā compressè excavato-umbilicatā, abbreviato-turbinatā, tenui, cinereo-fulvidā, rufō obscure quadrifasciatā, sericinā, anfractibus rotundatis, longitudinaliter densè filoso-striatis, lineis minutis spiralibus exsculptis, anfractu ultimo dilatato-producto; aperturā circulari, labro modicè plano-reflexo.*

THE FINELY-CORDED CYCLOSTOMA. Shell compressly excavately umbilicated, shortly turbinated, thin, ashy-tawny, obscurely four-banded with red, silky, whorls rounded, longitudinally densely thread-striated, sculptured with minute spiral lines, last whorl dilately produced; aperture circular, lip moderately flatly reflected.

LAMARCK, *Anim. sans vert.* vol. viii. p. 359.

Cyclostoma compressum, Gray.

Choanopoma lincinella, Pfeiffer.

Hab. Jamaica.

The last whorl of this species is dilately produced in a transverse direction, imparting a compressed form to the shell.

Species 138. (Mus. Cuning.)

CYCLOSTOMA PERPLICATUM. *Cycl. testā vix minutè umbilicatā, cylindraceo-turritā, fulvidā, anfractibus convexis, lineis fortibus spiralibus, striis longitudinalibus filiformibus densè decussatis exquisitè exsculptis, suturis impressis, rudè plicato-squamatis; aperturā parvisculā, labro parum reflexo.*

THE STRONGLY-PLAITED CYCLOSTOMA. Shell scarcely minutely umbilicated, cylindrically turreted, fulvous, whorls convex, exquisitely sculptured with strong spiral ridges densely decussated by longitudinal thread-like striae, sutures impressed, rudely plicately scaled; aperture rather small, lip but little reflected.

GUNDLACH, *Malak. Blitt.* 1857, p. 177.

Choanopoma perplicatum, Pfeiffer.

Hab. Cuba.

Exquisitely decussately sculptured, the longitudinal striae gathering into irregular plicated scales in the sutures.

Species 139. (Mus. Cuning.)

CYCLOSTOMA ARANGIANUM. *Cycl. testā angustè umbilicatā, subacuminato-turritā, fulvidā, castaneo strigatā et lineari-fasciatā, anfractibus convexis, costulis spiralibus subdistantibus, striis longitudinalibus densè decussatis pulcherrimè exsculptis; aperturā minutiusculā, labro subfimbriato.*

ARANGA'S CYCLOSTOMA. Shell narrowly umbilicated, rather acuminately turreted, fulvous, streaked and linearly banded with chestnut, whorls convex, very beautifully sculptured with rather distant spiral fine ribs, densely decussated with longitudinal striae; aperture rather minute, lip slightly frilled.

GUNDLACH, *Malak. Blitt.* 1857, p. 177.

Choanopoma Arangianum, Pfeiffer.

Hab. Cuba.

Sculptured with more broadly-latticed sculpture than the preceding species, and prettily painted with decussating chestnut bands.

Species 140. (Mus. Cuning.)

CYCLOSTOMA LIMA. *Cycl. testā modicè compressè umbilicatā, oblongo-turbinatā, purpurascente-brunneā, anfractibus rotundatis, lineis spiralibus striisque longitudinalibus densissimè scabroso-decussatis; aperturā circulari, labro latissimè plano-concavè fimbriato.*

THE FILE CYCLOSTOMA. Shell moderately compressly umbilicated, oblong-turbinated, purplish-brown, whorls rounded, very densely scabrously decussated with spiral lines and longitudinal striae; aperture circular, lip very broadly flatly concavely frilled.

ADAMS, *Proc. Nat. Hist. Soc. Boston*, 1845, p. 11.

Choanopoma lima, Pfeiffer.

Hab. Jamaica.

A finely scabrously decussated species, of a livid-purplish colour.

Species 141. (Fig. a, b, c, Mus. Cuning.)

CYCLOSTOMA MAJUSCULUM. *Cycl. testā angustè umbilicatā, subacuminato-oblongā, fulvescente, maculis parvis rufo-castaneis sagittiformibus interdum fasciatā, anfractibus convexis, undique densè malleato-clathratis, suturis plicato-squamatis, squamis subspinosis.*

opaco-albis; aperturâ pyriformi-rotundatâ, labro validè calloso-reflexo.

THE RATHER LARGE CYCLOSTOMA. Shell narrowly umbilicated, acuminate oblong, fulvous, sometimes banded with small reddish-chestnut arrow-headed spots, whorls convex, everywhere closely malleately latticed, sutures plicately scaled, scales subspinous, opaque-white; aperture pyriformly rounded, lip strongly callously reflected.

MORELET, MS. Gray, Cat. Phanerop. Brit. Mus. 1852, p. 108.

Choanopoma majusculum, Pfeiffer.

Cyclostoma pactum, Poey.

Choanopoma pactum, H. and A. Adams.

Hab. Cuba.

A boldly turbinated shell, finely malleately latticed throughout, banded with small arrow-headed chestnut spots.

Species 142. (Fig. *a, b*, Mus. Cuning.)

CYCLOSTOMA INTERRUPTUM. *Cycl. testâ compressè umbilicatâ, ovato-turbinatâ, pellucido-albâ, nitente, rufescente sparsim interruptè fasciatâ, anfractibus concentricis, sub lente tenuè decussatim striatis; aperturâ circulari, labro latissimè plano-concavè fimbriato, fimbriâ parè rufescente radiatim maculatâ.*

THE INTERRUPTED CYCLOSTOMA. Shell compressly umbilicated, ovately turbinated, transparent-white, shining, sparingly interruptedly banded with pale-red, whorls convex, beneath the lens finely decussately

striated; aperture circular, lip very broadly flatly concavely frilled, frill radiately spotted behind with pale-red.

LAMARCK, Anim. sans vert. vol. ix. p. 356.

Choanopoma interruptum, Gray.

Hab. Jamaica.

A delicately painted semitransparent-white shell, boldly convoluted and broadly concavely flatly frilled.

Species 143. (Mus. Cuning.)

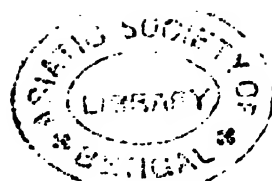
CYCLOSTOMA PEAMANNÆANUM. *Cycl. testâ subampliter apertè compressè umbilicatâ, subacuminato-turbinatâ, opaco-albâ, pallidè rufescente obsolete sparsim maculatâ, anfractibus rotundatis, subangustis, striis longitudinalibus crenatis undique densè annulatis, anfractu ultimo laxè elongato-producto; aperturâ parvâ, labro latè plano-fimbriato.*

PEAMANN'S CYCLOSTOMA. Shell rather largely openly compressly umbilicated, rather acuminate turbinated, opaque-white, sparingly obsolete blotched with pale-red, whorls rounded, rather narrow, densely ringed throughout with crenated longitudinal striae, last whorl loosely elongately produced; aperture small, lip broadly flatly frilled.

CHITTY, MS. in Mus. Cuning.

Hab. Jamaica.

A loosely convoluted *Cylindrella*-like species, densely ringed throughout with crenated lamelliform striae.





144



146



148



149



150



151



152



153

CYCLOSTOMA.

PLATE XXII.

Species 144. (Mus. Cuming.)

CYCLOSTOMA PRETRET. *Cycl. testâ profundè subexcavato-umbilicatâ, acuminato-turbinatâ, pellucido-albâ, anfractibus laxè convolutis, rotundatis, lamellis tenuibus spinoso-scabrosis undique annulatis; aperturâ circulari, labro parum fimbriato.*

PRETRET'S CYCLOSTOMA. Shell deeply rather excavately umbilicated, acuminately turbinated, transparent white, whorls loosely convoluted, rounded, ringed throughout with fine spinously scabrous lamellæ; aperture circular, lip but little frilled.

D'ORBIGNY, Moll. Cuba, p. 260. pl. 22. f. 9-11.

Choanopoma Pretrei, Gray.

Hab. Interior of Cuba.

An extremely delicate loosely convoluted sharply turbinated shell, encircled throughout with fine spine-sealed rings. Named after M. Prêtre, an eminent conchological artist of Paris.

Species 145. (Mus. Cuming.)

CYCLOSTOMA TENTORIUM. *Cycl. testâ latè ampliter umbilicatâ, depressè conoidèâ, solidiusculâ, aureo-fulvâ, sericinâ, rufo lineari-punctatâ, anfractibus angustis rotundatis, liris tenuibus spinosis reticulato-decussatis; aperturâ circulari, parviusculâ, labro concavo-fimbriatâ.*

THE PAVILION CYCLOSTOMA. Shell broadly largely umbilicated, depressly conoid, rather solid, golden-fulvous, silky, linearly dotted with red, whorls narrow, rounded, reticulately decussated with fine spinous ridges; aperture circular, rather small, lip concavely frilled.

PFEIFFER, Zeitschr. für Malac. 1850, p. 77.

Choanopoma tentorium, Pfeiffer.

Hab. Haiti; Sallé.

A largely-umbilicated shell, of bright golden-fulvous silky hue.

Species 146. (Mus. Cuming.)

CYCLOSTOMA ADOLPHI. *Cycl. testâ profundè perspectivè umbilicatâ, depresso-conoidèâ, fulvâ, lineis rufis interruptis cingulatâ, anfractibus convexis, angustis, spiraler linearis-aucatis, suturis crenatis; labro circulari,*

parviusculo, fimbriato, fimbriâ postè rufo radiatim maculatâ.

ADOLPHE'S CYCLOSTOMA. Shell perspectively umbilicated, depressly conoid, fulvous, encircled with interrupted red lines, whorls convex, narrow, spirally linearly grooved, sutures crenated; lip circular, rather small, frilled, frill radiately spotted behind with red.

PFEIFFER, Pro. Zool. Soc. 1845, p. 142.

Choanopoma Adolphi, Pfeiffer.

Hab. Haiti; Sallé.

A more solid shell than the preceding, not reticulated, but sculptured only with spiral engraved lines.

Species 147. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA HILLIANUM. *Cycl. testâ subampliter umbilicatâ, globoso-conoidèâ, fulvo-albidâ, rufo interruptè lineatâ et fasciatâ, anfractibus rotundatis, spiraler tenuirostratis, costis striis scabris longitudinalibus densè decussatis; aperturâ circulari, labra latè imbricatè fimbriatâ.*

HILL'S CYCLOSTOMA. Shell rather largely umbilicated, globosely conoid, fulvous-white, lineated and banded with red, whorls rounded, spirally finely ribbed, ribs closely decussated with longitudinal scabrous striae; aperture circular, lip broadly imbricately frilled.

ADAMS, Pro. Nat. Hist. Soc. Boston. 1845, p. 11.

Cyclostoma amandum, Adams.

Cyclostoma acylosum, Adams.

Choanopoma Hillianum, Pfeiffer.

Hab. Jamaica.

The two additional synonyms of Professor Adams indicate varieties in which the last whorl of the shell is more or less loosely convoluted.

Species 148. (Mus. Cuming.)

CYCLOSTOMA DECUSSATUM. *Cycl. testâ angustè umbilicatâ, oblongo-turbinatâ, fulvâ, lineis longitudinalibus angulosis rufis pectâ, anfractibus rotundatis, longitudinaliter densè filoso-liratis, suturis crenatis; aperturâ subpyriformi-rotundatâ, labro rudè fimbriato, fimbriâ superne utrinque subditulatâ.*

THE DECUSSATED CYCLOSTOMA. Shell narrowly umbilicated, oblong-turbinated, fulvous, painted with an-

gular longitudinal red lines, whorls rounded, longitudinally closely thread-ridged, sutures crenated; aperture somewhat pyriformly rounded, lip rudely frilled, frill slightly dilated on each side.

LAMARCK, *Anim. sans vert.* vol. vi. p. 358.

Choanopoma decussatum, Pfeiffer.

Hab. Porto Rico.

There is no spiral sculpture in this species. The term "decussated" appears to have been applied by Lamarck to express the dense crossing of the whorls by longitudinal ridges.

Species 149. (Mus. Cuming.)

CYCLOSTOMA PUDICUM. *Cycl. testā imperforatā, oblongo-conicā, violaceo-fuscā, rufo interruptè fasciatā, anfractibus convexis, undique densè reticulato-striatis; aperturā orato-rotundatā, labro latè imbricato-fimbriato, fimbriā utrinque dilatatā.*

THE CHASTE CYCLOSTOMA. Shell imperforated, oblong-conical, violet-brown, interruptedly banded with red, whorls convex, everywhere densely reticulately striated; aperture ovately rounded, lip broadly imbricately frilled, frill dilated on each side.

D'ORBIGNY, *Hist. Moll. Cuba*, p. 259. pl. 22. f. 6-8.

Choanopoma pudicum, Pfeiffer.

Hab. Cuba.

There is no umbilicus in this species.

Species 150. (Mus. Cuming.)

CYCLOSTOMA DECOLORATUM. *Cycl. testā subampliter umbilicatā, conico-turbinatā, solidā, albā, anfractibus rotundatis, spiraliter lineari-sulcatis, liris intermediis densè scabrosis, anfractu ultimo larinusculo; aperturā circulari, labro fimbriato, fimbriā incrassatā, imbricatā.*

THE DISCOLOURED CYCLOSTOMA. Shell rather largely umbilicated, conically turbinated, solid, white, whorls rounded, spirally linearly grooved, intermediate ridges densely scabrous, last whorl rather loose; aperture circular, lip frilled, frill thickened, imbricated.

GÜNDLACH, MS. in Mus. Cuming.

Hab. Cuba.

Of unusually solid growth, with the frill encircling the aperture quite thickened.

Species 151. (Mus. Cuming.)

CYCLOSTOMA DAUDINOTI. *Cycl. testā compressè umbilicatā, cylindraceo-acuminatā, livido-fulvescente, anfractibus convexis, longitudinaliter tenuissimè filoso-striatis, suturis conspicuè opaco-crenatis, anfractu ultimo larè producto; aperturā pyriformi-ovatā, parvā, labro eximè fimbriato-reflexo.*

DAUDINOT'S CYCLOSTOMA. Shell compressly umbilicated, cylindrically acuminate, livid fulvous, whorls convex, longitudinally very finely thread-striated, sutures conspicuously opaquely crenated, last whorl loosely produced; aperture pyriformly ovate, small, lip delicately fimbriately reflected.

GÜNDLACH, MS. in Mus. Cuming.

Hab. Cuba.

The sutural crenations of this species are opaque and large compared with the livid semitransparency and fine longitudinal sculpture of the rest of the shell.

Species 152. (Mus. Cuming.)

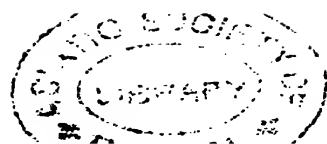
CYCLOSTOMA MINIMUM. ? *Cycl. testā compressè umbilicatā, cylindraceo-oblongā, miniato-fulcā, rufo-fusco sparsim punctatā, anfractibus convexis, spiraliter liris, liris linearibus, confertis, interstitiis exilissimè clathratis, suturis spinoso-crenatis; aperturā circulari, labro latè imbricato-fimbriato, fimbriā utrinque subdilatatā.*

THE SCARLET-TINGED CYCLOSTOMA. Shell compressly umbilicated, cylindrically oblong, scarlet-tinged fulvous, sparingly dotted with red-brown, whorls convex, spirally ridged, ridges linear, close-set, interstices very finely latticed, sutures spinosely crenated; aperture circular, lip broadly imbricately frilled, frill a little dilated on each side.

GÜNDLACH, MS. in Mus. Cuming.

Hab. Cuba.

This and the two preceding species, collected in the island of Cuba by M. Gündlach, are three well-defined and interesting additions to the genus.





153.



154.



155.



156.



157.



158.



159.



160.a.



160.b.



161.

CYCLOSTOMA.

PLATE XXIII.

Species 153. (Mus. Cuming.)

CYCLOSTOMA FRAGILE. *Cycl. testā subampliter perspectivè umbilicatā, acuminato-conicā, pellucido-albā, corneā, anfractibus rotundatis, longitudinaliter irregulariter plicato-striatis, ultimo sublaevè convoluta; aperturā circulari, labro simplici, supernè subsinuata.*

THE FRAGILE CYCLOSTOMA. Shell rather largely perspective-umbilicated, acuminately conical, transparent white, horny, whorls rounded, longitudinally irregularly plicately striated, last whorl rather loosely convoluted; aperture circular, lip simple, slightly sinuated at the upper part.

GÜNDLACH, MS. in Mus. Cuming.

Hab. Cuba.

A white transparent horny sharply convoluted shell, with the last whorl rather loose.

Species 154. (Mus. Cuming.)

CYCLOSTOMA NIVEUM. *Cycl. testā latissimè apertè umbilicatā, depressè discoideā, sordide albā, anfractibus angustis, lentè accrescentibus, spiraliter filoso-liratis, ultimo ad peripheriam carinato; aperturā parvā, circulari, labro calloso, viz reflexo, marginibus disjunctis.*

THE SNOWY CYCLOSTOMA. Shell very broadly openly umbilicated, depressly discoid, dead white, whorls narrow, increasing slowly, spirally thread-ridged, last whorl keeled at the periphery; aperture small, circular, lip callous, scarcely reflected, margins disjoined.

PETIT, Journ. Conch. 1850, p. 52. pl. 3. f. 7.

Lithidion niveum, Pfeiffer.

Hab. Madagascar.

This is the first of five little species figured in this Plate, constituting Dr. Gray's genus *Lithidion*.

Species 155. (Mus. Cuming.)

CYCLOSTOMA SOULEYETIANUM. *Cycl. testā latè perspectivè umbilicatā, depressā, discoideā, solidā, fusco-carneā, anfractibus angustis, spiraliter filoso-liratis, interstitiis concavis, subcrenulatis, nublus lævibus, nitentibus; aperturā parvā, perobliquè semiovalā, fauce croceā, labro calloso-reflexo, marginibus remotè disjunctis.*

SOULEYET'S CYCLOSTOMA. Shell broadly perspective-umbilicated, depressed, rather discoid, solid, brownish flesh-colour, whorls narrow, spirally thread-ridged, interstices concave, faintly crenulated, smooth and shining beneath; aperture small, very oblique, semi-ovate, interior saffron, lip callously reflected, margins widely disjoined.

PETIT, Journ. Conch. 1850, p. 52. pl. 3. f. 6.

Cyclostoma paradoxum, Pfeiffer.

Lithidion Souleyetianum, Pfeiffer.

Hab. Island of Abd-el-Gonry, near Socotra; Guillain.

Not so depressly discoid as the preceding species, but having the aperture very oblique, with the margins unusually widely separated.

Species 156. (Mus. Cuming.)

CYCLOSTOMA LITHIDION. *Cycl. testā latissimè excavato-umbilicatā, subdiscoideā, solidiusculā, sordide albā, anfractibus angustis, validè filoso-liratis, interstitiis concavo-sulcatis; aperturā parvā, perobliquā, labro calloso-reflexo, marginibus disjunctis.*

THE PEBBLE CYCLOSTOMA. Shell very broadly excavately umbilicated, nearly discoid, rather solid, dead white, whorls narrow, strongly thread-ribbed, interstices concavely grooved; aperture small, very oblique, lip callously reflected, margins disjoined.

SOWERBY, Thes. Conch. p. 111. pl. 31. f. 262.

Lithidion sulcatum, Gray.

Hab. Yemen, Arabia; Powis.

Strongly thread-ridged throughout with a large regularly excavated perspective umbilicus.

Species 157. (Mus. Cuming.)

CYCLOSTOMA DEPRESSUM. *Cycl. testā latissimè apertè umbilicatā, discoideā, albidā, flammis et strigis pallide corneis variegatā, spirā planulatā, suturā impressā, anfractibus angustis, lentè accrescentibus, supra spiraliter liratis et carinatis, infra lævibus; aperturā parvā, obliquā, labro subreflexo.*

THE DEPRESSED CYCLOSTOMA. Shell very broadly openly umbilicated, discoid, whitish, variegated with pale horny flames and streaks, spire rather flat, suture impressed, whorls narrow, slowly increasing, spi-

rally ridged and keeled above, smooth below; aperture small, oblique, lip a little reflected.

SOWERBY, Thes. Conch. p. 161. pl. 31 b. f. 306, 307.

Lithidion depressum, Pfeiffer.

Hab. — ?

More discoidly convoluted, and therefore more widely openly umbilicated than the preceding species.

Species 158. (Mus. Cuming.)

CYCLOSTOMA DESCISCENS. *Cycl. testā profundē excavato-umbilicatā, subdiscoidē, carneo-albidā, anfractibus angustis, supra spiraliter tenuilatis, infra laevibus, submalleatis, ultimo subdescendente; aperturā parvā, obliquā, labro callosa-reflexo.*

THE ALTERED CYCLOSTOMA. Shell deeply excavately umbilicated, rather discoid, flesh-tinted white, whorls narrow, spirally finely ridged above, smooth and faintly malleated below, last whorl a little descending; aperture small, oblique, lip callously reflected.

PFEIFFER, Pro. Zool. Soc. 1851. p. 243.

Lithidion desciscens, Pfeiffer.

Hab. Island of Socotra.

A more compactly-whorled species than either of the preceding of the *Lithidion* group, finely ridged above, while the under surface is smooth and faintly malleated.

Species 159. (Mus. Cuming.)

CYCLOSTOMA EBURNEUM. *Cycl. testā latissimē apertē umbilicatā, subdiscoidē, semipellucido-albā, anfractibus subangustis, liris filosis longitudinalibus undique densē annulatis; aperturā obliquē circulari, labro tenuē expanso-reflexo, supernē laminato-alato.*

THE IVORY CYCLOSTOMA. Shell very broadly openly umbilicated, nearly discoid, semitransparent white, whorls rather narrow; densely ringed throughout with longitudinal thread-ridges; aperture obliquely circular, lip thinly expandedly reflected, laminately winged at the upper part.

GUNDLACH, MS. in Mus. Cuming.

Hab. Cuba.

This shell has somewhat of the general form of *Lithidion*, but it is quite of another type.

Species 160. (Fig. a, b, Mus. Cuming.)

CYCLOSTOMA SOLUTUM. *Cycl. testā latissimē excavato-umbilicatā, depresso-orbiculari, albidā, lineis rufis interruptis spiraliter pictā, anfractibus subangustis, rotundatis, liris longitudinalibus tenuibus filosis undique densē annulatis; aperturā circulari, labro laminato-fimbriato.*

THE LOOSELY WHORLED CYCLOSTOMA. Shell very broadly excavately umbilicated, depressly orbicular, whitish, spirally painted with red interrupted lines, whorls rather narrow, rounded, densely ringed throughout with longitudinal fine thread-ridges; aperture circular, lip laminately frilled.

RICHARD, Pfeiffer, Küster, Conch. Cab. pl. 39. f. 8-10.

Choanopoma solutum, Pfeiffer.

Hab. Haiti.

The sculpture is like that of the preceding species, but the lip has a delicate frill round it, and the shell is banded with interrupted red lines.

Species 161. (Mus. Cuming.)

CYCLOSTOMA ALATUM. *Cycl. testā subampliter excavato-umbilicatā, conoideo-depressā, solidulā, opaco-albā, anfractibus rotundatis, striis plicato-laminatis undique densē annulatis; aperturā rotundatā, fauce sanguinea marginalā, labro parum reflexo, supernē alato.*

THE WINGED CYCLOSTOMA. Shell rather largely excavately umbilicated, conoidly depressed, rather solid, opaque-white, whorls rounded, everywhere densely ringed with plicately-laminated striæ; aperture rounded, interior edged with blood-red, lip but little reflected, winged at the upper part.

PFEIFFER, Pro. Zool. Soc. 1851, p. 250.

Choanopoma alatum, Pfeiffer.

Hab. Cuba.

The ringed sculpture of this species is developed in fine plicated laminae. In the aperture is a characteristic blood-red circular band.

CYCLOSTOMA.

	Plate.	Species.
<i>aculeosum</i> , Adams	XXII.	147
Adolphi, Pfeiffer	XXII.	146
<i>agilvocoem</i> , Pfeiffer	VII.	40
<i>affinis</i> , Risso	XI.	66
<i>alatum</i> , Pfeiffer	XXIII.	161
<i>albicans</i> , Sowerby	XVIII.	120
<i>album</i> , Sowerby	XII.	73
<i>amabile</i> , Adams	XX.	136
<i>amandum</i> , Adams	XXII.	147
<i>aplustre</i> , Sowerby	III.	14
<i>Aranganum</i> , Gundlach	XXI.	139
<i>Arthurii</i> , Grateloup	X.	55
<i>articulatum</i> , Gray	VI.	29
<i>asperum</i> , Potiez and Michaud	III.	15
<i>aurantium</i> , Anton	XI.	66
<i>auricomum</i> , Gundlach	XIV.	90
<i>auriculare</i> , Gray	XVIII.	118
<i>Banksianum</i> , Sowerby	XV.	98
<i>Barclayanum</i> , Pfeiffer	II.	7
<i>Belairi</i> , Petit	II.	8
<i>bicarinatum</i> , Sowerby	I.	1
<i>Blandianum</i> , Adams	XX.	134
<i>Boivini</i> , Pfeiffer	II.	9
<i>Bronni</i> , Adams	XI.	62
<i>Calfrum</i> , Beck	XI.	67
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<i>campanulatum</i> , Pfeiffer	I.	5
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<i>decoloratum</i> , Gundlach	XXII.	150
<i>decussatum</i> , Lamarck	XXII.	148
<i>deliciosum</i> , Férussac	VII.	35
<i>depressum</i> , Sowerby	XXIII.	157
<i>desciscens</i> , Pfeiffer	XXIII.	158
<i>Deshayesianum</i> , Petit	V.	24
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<i>euchilum</i> , Pfeiffer	I.	3
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<i>finbriatulum</i> , Sowerby	XX.	133
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<i>flexilabrum</i> , Sowerby	XIX.	124
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<i>fusco-lineatum</i> , Adams	XI.	62
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			Plate.	Species.	
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<i>honestum</i> , Poey	XVII.	108	<i>paradoxum</i> , Pfeiffer	XXIII.	155
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<i>Kieueri</i> , Pfeiffer	XIV.	89	<i>pictum</i> , Sowerby	XII.	74
<i>Kraussianum</i> , Pfeiffer	IX.	52	<i>polysulcatum</i> , Potiez and Mich.	XI.	66
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<i>multifasciatum</i> , Grateloup	I.	2	<i>Souleyetianum</i> , Petit	XXIII.	155
<i>multilineatum</i> , Jay	XIX.	124	<i>Sowerbyi</i> , Pfeiffer	VIII.	44
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<i>Novae Hiberniae</i> , Quoy	XVI.	100	<i>sulcatum</i> , Draparnaud	XI.	66
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<i>obsoletum</i> , Lamarck	IV.	18	<i>sulculosum</i> , Ferussac	XVI.	105
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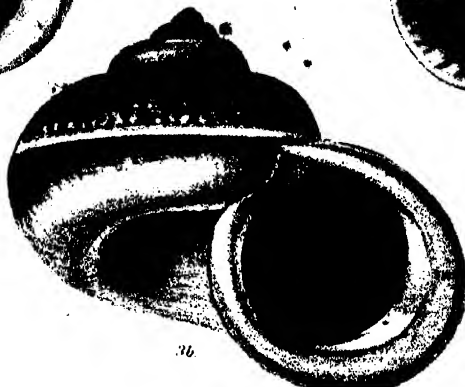
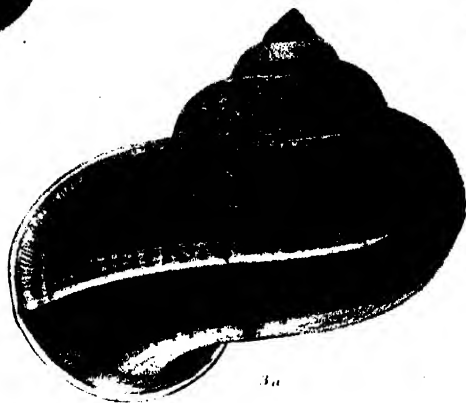
	Plate.	Species.		Plate.	Species.
<i>Syriacum</i> , Ziegler	XIV.	86	<i>verecundum</i> , Poey	XVII.	111
<i>tectilabre</i> , Adams	XV.	95	<i>virgatum</i> , Sowerby	XII.	76
<i>tenellum</i> , Sowerby	XI.	66	<i>virgo</i> , Pfeiffer	V.	27
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<i>tenue</i> , Sowerby	XVI.	107	<i>vitreum</i> , Sowerby	XVI.	100
<i>Terreianum</i> , Grateloup	VI.	29	<i>vittatum</i> , Sowerby	IV.	19
<i>thysanoraphe</i> , Sowerby	XIII.	82	<i>Wilkinsonii</i> , Adams	XVII.	110
<i>tricarinatum</i> , Sowerby	V.	23	<i>xanthocheilum</i> , Sowerby	IX.	50
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MONOGRAPH
OF THE GENUS
C Y C L O P H O R U S.

“Where they
Most breed and haunt, I have observed, the air
Is delicate.”

Shakspeare.



CYCLOPHORUS.

PLATE I.

Genus CYCLOPHORUS, *De Montford*.

Testa globoso-turbinata, ampliter umbilicata; anfractibus ad suturas plerumque depressiusculis, deinde rotundatis; aperturâ plus minus circulari, labro sæpiissime reflexo; operculum corneum, tenue arcispirum, extus concavum.

Shell globosely turbinated, largely umbilicated; whorls generally rather depressed at the sutures, then rounded; aperture more or less circular, lip mostly reflected; operculum horny, thin, close-spined, concave externally.

Cyclophorus, it is scarcely necessary to mention, is a division of the Lamarckian genus *Cyclostoma*. So varied an assemblage of forms—some with a horny, some with a shelly operculum—as were associated together in that genus could not long be maintained, and the discovery of still more varied forms with yet stranger varieties of opercula made a new subdivision of the group indispensable. This has been so ably effected by Dr. Pfeiffer, in his ‘*Monographia Pneumonopomorum Viventium*,’ that I propose, with a few trifling exceptions, to follow the genera of his now universally adopted classification.

The *Cyclophori*, comprising many of the most beautiful species of the family, are extremely local; all, indeed, of a marked typical character are natives of that very prolific and truly interesting region at the south-eastern corner of Europe, occupying, with its adjacent islands, some twenty-five to thirty degrees north of the Equator. There are no *Cyclophori* in Afghanistan or the Punjab; but at Sikkim-Himalaya, and the Neilgherry and Khasiah Hills, magnificent species appear. Descending towards the Equator in an easterly direction, the genus may be said to have its *maximum* development in the Burmese territories, Siam and Cambodia, and in Malacca and the Malay Peninsula. Four or five species, of a characteristic discoidal type, are found in Ceylon, but only two can be said to be peculiar to that island. Two species are reported from China, five from Sumatra and Java, two from the Bashees, and about a dozen were collected by Mr. Cuming in the Philippine Islands. Borneo contributes four species, and Amboyna one. The remaining species of the eastern hemisphere are, two inhabiting South Africa, one from the Island of Madagascar. Two small species, varieties probably of the same abnormal form, have been described from Swan River, Australia; two from New

Hebrides; and five from other islands in the South Pacific; but these have very little relationship with the Indian types, and even their generic position is not altogether satisfying. In the western hemisphere *Cyclophorus* is represented by nine species of a quite distinct type, partaking more of the form of *Cyclofus*, in Central America and two in Brazil. A species is also recorded from the West Indies.

Species 1. (Mus. Cuming.)

CYCLOPHORUS INVOLVULUS. *Cycl. testâ conspicuè umbilicatâ, orbiculari-turbinatâ, solidâ, fulvescente-albâ, castaneo saturatè marmoratâ, versus apicem fulguratâ, ad peripheriam pallidâ, deinde latè fasciatâ; anfractibus subrotundatis, supernè spiralliter liris numerosis, subirregularibus; aperturâ circulari, fauce prope labrum aurantio-rufâ, labro incrassato, parum reflexo.*

THE CANKER-WORM CYCLOPHORUS. Shell conspicuously umbilicated, orbicularly turbinated, solid, fulvous-white, darkly marbled with chestnut, zigzag-marked towards the apex, pale at the periphery, then broadly banded, whorls somewhat rounded, spirally ridged at the upper part, ridges numerous, rather irregular; aperture circular, interior orange-red towards the lip, lip thickened, but little reflected.

Helix involvulus, Müller, Hist. Verm. vol. ii. p. 84.

Tubo volvulus (pars), Chemnitz.

Cyclostoma volvulus (pars), Lamarck.

Cyclostoma involvulus, Gray.

Cyclophora involvulus, Swainson.

Hab. Ceylon; India.

C. volvulus and *involvulus*, well distinguished by Müller, were confounded together by Lamarck. *C. involvulus* is much the commoner species, rather smaller, of more solid substance, spirally ridged on the upper surface, pale and smooth around the umbilicus, and especially characterized by an orange-red throat to the aperture.

Species 2. (Fig. a, b, Mus. Benson.)

CYCLOPHORUS MALAYANUS. *Cycl. testâ subampliter umbilicatâ, subtransversè turbinatâ, albidâ, rufo-castaneo fasciatâ et lentiginosâ, ad peripheriam angustè pallidâ, deinde subangustè saturatè fasciatâ, fasciâ hic illic ar-*

liculatâ, circa umbilicum leviter lineari-fasciatâ; anfractibus depresso-convexis, levibus, partim granoso-striatis; aperturâ ferè circulari, labro reflexo.

THE MALAY CYCLOPHORUS. Shell rather largely umbilicated, somewhat transversely turbinated; whitish, banded and freckled with reddish chestnut, narrowly pale at the periphery, then rather narrowly dark-banded, band here and there articulated, faintly linearly banded around the umbilicus; whorls depressly convex, smooth, partially granosely striated; aperture nearly circular, lip reflected.

Cyclostoma Malayanum, Benson, Ann. and Mag. Nat. Hist. 1852, p. 269.

Cyclophorus Malayanus, Pfeiffer.

Hab. Island of Pulo-Penang, and Malay Peninsula.

Few naturalists will be inclined to regard this species as anything more than a local variety of the Pegu *C. speciosus*. The type specimen has a double lip to the aperture; but this appears to be rather an accidental development than a specific character.

Species 3. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS AURANTIACUS. *Cycl. testâ peramplius excavato-umbilicatâ, subtransversè turbinatâ, solidâ, fulvescente-albâ, rufo-castaneo tinctâ et lentiginosâ, ad peripheriam angustè pallidâ, deinde latè saturatè fasciatâ; anfractibus depresso-convexis, superne spiraliter lirato-striatis; aperturâ ferè circulari, amplâ, labro eleganter reflexo, aurantio.*

THE ORANGE CYCLOPHORUS. Shell very largely excavately umbilicated, rather transversely turbinated, solid, fulvous-white, stained and freckled with reddish-white, narrowly pale at the periphery, then

broadly dark-banded; whorls depressly convex, spirally ridge-striated at the upper part; aperture nearly circular, large, lip elegantly reflected, orange.

Annularia aurantiaca, Schumacher, Essai, p. 196.

Turbo volvulus (pars), Chemnitz.

Cyclostoma pernobile, Gould.

Cyclophorus aurantiacus, Pfeiffer.

Hab. Burmah.

This fine species is distinguished by a large subangularly excavated umbilicus and inflated aperture, with a boldly reflected orange lip.

Species 4. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS SPECIOSUS. *Cycl. testâ subamplius umbilicatâ, solidâ, subtransversè turbinatâ, albidâ, rufo-castaneo plus minus tinctâ et lentiginosâ, interdum fasciatâ, infra peripheriam latè saturatâ, circa umbilicum lineari-fasciatâ; aperturâ ferè circulari, labro latè reflexo.*

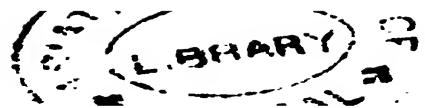
THE HANDSOME CYCLOPHORUS. Shell rather largely umbilicated, solid, somewhat transversely turbinated, whitish, more or less stained and freckled with reddish-chestnut, sometimes banded, broadly darkened below the periphery, linearly banded around the umbilicus; aperture nearly circular, lip broadly reflected.

Cyclostoma speciosum, Philippi, Zeitschr. für Malak. 1847, p. 123.

Cyclophorus speciosus, Pfeiffer.

Hab. Pegu, Burmah.

The umbilicus is not so excavately enlarged in this species as the preceding, and the shell is smoother, but the two species are exceedingly near.





5.



6a



6b



7a



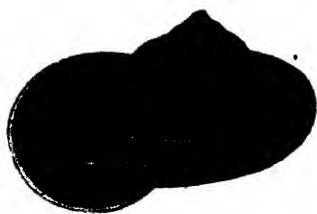
8a



8b



7b



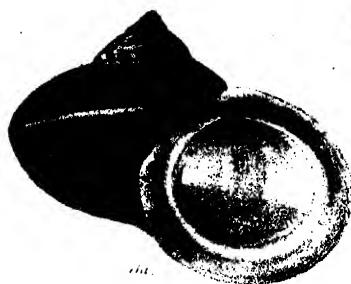
9a.



10b.



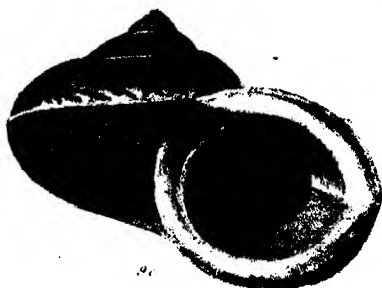
9b.



11a.



11b.



12c.

CYCLOPHORUS.

PLATE III.

Species 9. (Fig. a, b, c, Mus. Cuming.)

CYCLOPHORUS TUBA. *Cycl. testā subamplius profunde umbilicatā, transversē ovatā, tenuiculā, sub epidermide fulvā albidā, rufescente-fusco reticulatim lentiginosā et nubeculatā, maculis parvis obliquis juxta suturas tentatā, fasciā latā lentiginosā infra peripheriam; anfractibus rotundatis, ultimo versus aperturam elegantissimē inflato; labro latē expanso-reflexo.*

THE TRUMPET CYCLOPHORUS. Shell largely deeply umbilicated, transversely ovate, rather thin, whitish beneath a fulvous epidermis, reticulately freckled and clouded with reddish-brown, filleted with a row of small oblique blotches next the sutures, a broad freckled band below the periphery; whorls rounded, the last very elegantly inflated towards the aperture; lip broadly expandedly reflected.

Cyclostoma tuba, Sowerby, Pro. Zool. Soc. 1843, p. 83.

Cyclophorus tuba, Pfeiffer.

Cyclophorus Sumatrensis, Pfeiffer.

Hab. Malacca, Sumatra.

This very elegantly convoluted species is characterized by a peculiarly expanded growth of the shell on arriving at maturity, the aperture opening out, with its broadly dilated lip, like a French horn. *C. Sumatrensis*, Pfeiffer, of which the type-specimen is represented at Fig. 9 a, is a variety in which the upper half of the whorls is devoid of the freckled painting. The sutural blotches and the band below the periphery are very neatly defined.

Species 10. (Mus. Brit.)

CYCLOPHORUS PEARSONI. *Cycl. testā modicē umbilicatā, orbiculari-turbinatā, sub epidermide tenui fulvescente-albā, ustulato-castaneo tinctā et lineatā, versus apicem fulguratā, ad peripheriam fasciā perangustā, albidā, fasciā nigricante paulo latiore umbratā; spirā elevatiusculā, anfractibus declivi-rotundatis, spiraliter dense granoso-striatis, ultimo ad peripheriam interdum obscure carinato; aperturā serē circulantē labro eleganter reflexo, vivide rufo-aurantio.*

PEARSON'S CYCLOPHORUS. Shell moderately umbilicated, orbicularly turbinated, yellowish-white beneath a thin epidermis, stained and lineated with burnt chestnut, a very narrow white band at the periphery, shaded by a rather broader blackish band; spire somewhat

raised, whorls slopingly rounded, spirally densely grain-striated, the last sometimes obscurely keeled at the periphery; aperture almost circular, lip elegantly reflected, bright rufous-orange.

Cyclostoma Pearsoni, Benson, Ann. and Mag. Nat. Hist., Second Series, vol. viii. p. 185.

Cyclophorus Pearsoni, Pfeiffer.

Hab. Khasya Hills, India; Dr. Hooker.

The specimen of this very charming species here figured, which is in finer condition, enveloped by a delicate epidermis, and has a deeper-coloured lip than any other known to me, was collected by Dr. Hooker on the Khasya Hills.

Species 11. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS PFEIFFERI. *Cycl. testā modicē umbilicatā, subgloboso-turbinatā, tenuiusculā in medio subobsoletē carino-angulatā, albidā, fulvescente-fusco supra peripheriam tenuē lentiginosā, infra saturatē latifasciatā; spirā elevatiusculā, anfractibus rotundatis, spiraliter confertim leviter granoso-striatis, ultimo versus aperturam rotundato-inflato, circa umbilicum subremotē lineari-fusciatō; labro latissimē plano-expanso, rufo-aurantio.*

PFEIFFER'S CYCLOPHORUS. Shell moderately umbilicated, somewhat globosely turbinated, rather obsoletely keel-angled round the middle, rather thin, whitish, lightly freckled with fulvous-brown above the periphery, broadly banded, of a darker tone below it; spire somewhat raised, whorls rounded, spirally closely lightly grain-striated, last whorl rotundately inflated towards the aperture, rather distantly linearly banded around the umbilicus, lip very broadly flatly expanded, rufous-orange.

Hab. Island of Pulo-Penang.

More globosely convoluted than *C. tuba* or *speciosa*, with the whorls rounded and the spire more elevated. The lip is equally largely expanded, but instead of curling gracefully over, it is expanded in a sharply angular flattened manner. The specimen figured was named by Dr. Pfeiffer in manuscript *C. Cantori*, but it will be found, on reference to our figure of Mr. Benson's type of that species, to be materially distinct.

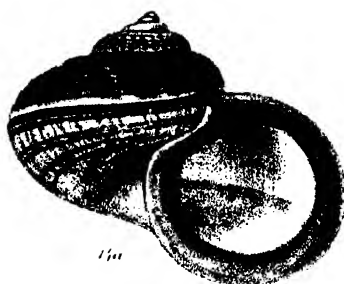




12a



13b



14a



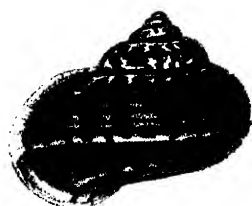
15a



16b



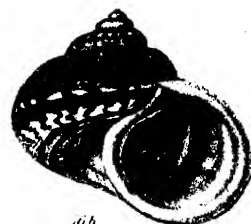
17a



18a



19a



20b

CYCLOPHORUS.

PLATE IV.

Species 12. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS FLORIDUS. *Cycl. testâ subangustâ umbilicatâ, globoso-turbinatâ, albidâ, maculis fuscis sagittæformibus, interdum in strigas angulosas confluentibus, subsparsim supernè pictâ, fasciâ unicâ angustâ fuscâ infra peripheriam; anfractibus rotundatis, parum striatis; aperturâ circulari, labro calloso-reflexo.*

THE FLORID CYCLOPHORUS. Shell rather narrowly umbilicated, globosely turbinated, whitish, somewhat sparingly painted on the upper part with arrow-headed brown spots, sometimes flowing together into angular streaks, a single narrow band beneath the periphery; whorls rounded, but faintly striated; aperture circular, lip callously reflected.

Cyclostoma floridum, Pfeiffer, Pro. Zool. Soc. 1854, p. 300.

Cyclophorus floridus, Pfeiffer.

Hab. Siam.

Rather sparingly painted with zigzag arrow-head brown spots, upon a marble-white ground. There is no marking around the umbilicus, and the band is rather below the periphery.

Species 13. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS PYROTREMA. *Cycl. testâ subangustâ umbilicatâ, globoso-turbinatâ, albidâ, versus apicem purpurascens supernè ustulato-castaneo, fulguratim strigatâ et marmoratâ, ad peripheriam immaculatâ, deinde saturatè fasciatâ, circa umbilicum niliud subremotè fusco lineatâ; anfractibus supernè declivi-convexis, spiraliter carino-liratis et striatis, infernè rotundatis, lævibus; aperturâ circulari, labro vividè miniato-aurantio, parum reflexo.*

THE FIERY LIP CYCLOPHORUS. Shell rather angularly umbilicated, globosely turbinated, whitish, tinged with purple towards the apex, zigzag-streaked and marbled at the upper part with burnt-chestnut, unspotted at the periphery, then dark banded, neatly rather distantly lineated with brown around the umbilicus; whorls slopingly convex, spirally keeled and striated at the upper part, rounded and smooth at the lower; aperture circular, lip bright vermilion-orange, but little reflected.

BENSON, Ann. and Mag. Nat. Hist. Second Series, vol. xiv. p. 412.

Hab. Bengal Presidency, India.

It is somewhat difficult to distinguish this species from certain varieties of *C. stenomphalus*. The less reflected and deeper coloured lip are not of much specific value; the most important difference consists in the whorl being more circularly contracted.

Species 14. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS HIMALAYANUS. *Cycl. testâ modicè umbilicatâ, orbiculari-turbinatâ, depressiusculâ, solidâ, albâ, versus apicem purpurascens, nigricans-fusco partim tinclâ, juxta suturas obscurè obliquè maculatâ, infra peripheriam conspicuè angustè fasciatâ, deinde obscurè interruptè lineatâ; anfractibus rotundatis, juxta suturas depresso-planis, supernè validè confertim carino-liratis et striatis, infernè lævibus; aperturâ circulari, labro calloso-reflexo, intus vividè sanguineo.*

THE HIMALAYAN CYCLOPHORUS. Shell moderately umbilicated, orbicularly turbinated, rather depressed, solid, white, purplish towards the apex, partially stained with black-brown, obscurely obliquely blotched next the sutures, conspicuously narrowly banded below the periphery, then obscurely interruptedly lineated; whorls rounded, depressly flattened next the sutures, strongly closely keel-ridged and striated at the upper part, smooth at the lower; aperture circular, lip callously reflected, blood-red within.

Cyclostoma Himalayanum, Pfeiffer, Pro. Zool. Soc. 1851, p. 242.

Cyclophorus Himalayanus, Pfeiffer.

Cyclostoma Tryblum, Benson.

Hab. Himalaya Mountains.

A fine strongly convoluted shell, with little or no configuration of pattern, being merely irregularly stained with black-brown upon a marble-white ground. There is a well-defined narrow band below the periphery, and the lip is stained in a very characteristic manner with deep blood-red.

Species 15. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS INDICUS. *Cycl. testâ modicè umbilicatâ, cónico-turbinatâ, subinflatâ, fulvescente, ustulato-fusco*

lineatâ et marmoratâ, juxta suturas flammâtâ, ad peripheriam tæniatâ, circa umbilicum pellucido-albâ plus minus lineatâ; anfractibus juxta suturas planiusculis, deinde declivi-rotundatis, tumidiusculis, confertim corrugato-liratis et striatis, infernè lævibus; aperturâ fere circulari, labro expanso-reflexo, aurantio.

THE INDIAN CYCLOPHORUS. Shell moderately umbilicated, conically turbinated, rather inflated, fulvous, stained and marbled with burnt-brown, flamed next the sutures, filleted at the periphery, transparent-white around the umbilicus, more or less lineated; whorls rather flat next the sutures, then slopingly rounded, a little swollen, closely wrinkle-ridged and striated, smooth at the lower part; aperture nearly circular, lip expandedly reflected, orange.

Cyclostoma Indicum, Deshayes, Voy. dans l'Inde par Belanger, Zool. p. 415. pl. 1. f. 4, 5.

Cyclophorus Indicus, Pfeiffer.

Hab. Bombay Presidency, India.

The whorls of this species have a rather swollen growth, and the painting is of a characteristic filleted pattern at the periphery.

Species 16. (Fig. *a*, *b*, Mus. Cuming.)

CYCLOPHORUS STENOMPHALUS. *Cycl. testâ subangustè umbilicatâ, conico-turbinatâ, trochiformi, subinflatâ,*

ustulato-fuscatâ, albo juxta suturas et supra et infra peripheriam fulguratâ, circa umbilicum linearifasciatâ, anfractibus superne declivi-convexis, tumidiusculis, subremotè carino-liratis, striis validis confertim interjectis, superne convexis, lævibus; aperturâ fere circulari, labro expanso-reflexo, aurantio, margine sinistro sublingulato.

THE NARROWLY UMBILICATED CYCLOPHORUS. Shell rather narrowly umbilicated, conically turbinated, trochiform, rather inflated, burnt-brown, zigzag-marked with white next the sutures and above and below the periphery, linearly banded around the umbilicus; whorls slopingly convex at the upper part, rather swollen, rather distantly keel-ridged, with strong close-set striæ intervening, convex at the lower, smooth; aperture nearly circular, lip expandedly reflected, orange, left margin slightly lingulate.

Cyclostoma stenomphalum, Pfeiffer, Zeitschrift für Malac. 1846, p. 44.

Cyclophorus stenomphalus, Pfeiffer.

Hab. Khasya Hills, Bengal Presidency, India.

The differences alleged to be peculiar to this species are those of having a more trochiform growth, and more distinct and distant keel-ridges. It is important that the three species figured on either side of this Plate should be given in the monograph, but I am far from being satisfied of their distinctness.





16a



16b



18a



18b



20b



19b



17b



CYCLOPHORUS.

PLATE V.

Species 17. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS MACULOSUS. *Cycl. testā latē perspectivē umbilicatā, subdiscoidē, solidiusculā, albā, fulvo-castaneo obliquē maculatā et spiraliter lineatā, infra peripheriam interruptē fasciatā, circa umbilicum nitidē lineatā, spirā depressā, anfractibus angustis, rotundatis, levibus, juxta suturas planatis; aperturā parviusculā, circulari, labro incrassato, viz reflexo.*

THE BLOTCHED CYCLOPHORUS. Shell broadly perspective-ly umbilicated, nearly discoid, rather solid, whitish, obliquely blotched and spirally lineated with fulvous-chestnut, interruptedly banded beneath the periphery, neatly lineated around the umbilicus, spire rather depressed, whorls narrow, rounded, smooth, flattened next the sutures; aperture rather small, circular, lip thickened, scarcely reflected.

Cyclostoma maculosum, Sowerby, Pro. Zool. Soc. 1843, p. 66. Thes. Conch. vol. i. p. 112. pl. 31. f. 256, 257.

Cyclophorus maculosus, Pfeiffer.

Hab — ?

A rather depressly discoid shell, characterized by an obliquely blotched painting of fulvous-chestnut, crossed by spiral lines of the same colour.

Species 18. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS EXPANSUS. *Cycl. testā modicē umbilicatā, subgloboso-turbinatā, tenuiculā, albā, supra castaneo-fusco lentiginosā, infra peripheriam conspicuē fasciatā et lineatā, spirā conoidē, anfractibus declivi-rotundatis, undique granoso-striatis; aperturā subinflatā, labro tenuē latē plano-expanso.*

THE EXPANDED CYCLOPHORUS. Shell moderately umbilicated, somewhat globosely turbinated, rather thin, white, freckled with chestnut-brown above the periphery, conspicuously banded and lineated below it, spire conoid, whorls slopingly rounded, everywhere granosely striated; aperture rather inflated, lip thinly broadly flatly expanded.

Cyclostoma expansum, Pfeiffer, Pro. Zool. Soc. 1851. p. 242.

Cyclophorus expansus, Pfeiffer.

Hab. Tavoy, Burmah; Tenasserim River; Benson.

A rather light inflated shell, with a broad flatly expanded lip, encircled below the periphery with a mass of bands and lines.

Species 19. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS SIAMENSIS. *Cycl. testā subampliter excavato-umbilicatā, depressē turbinatā, solidā, sub epidermide ustulato-flavā albā, nigricante-castaneo copiosē undato-striatā et nebulatā, circa umbilicum immaculatā, anfractibus rotundatis, minūtē granoso-striatis; aperturā circulari, labro validē reflexo, interdum aurantio.*

THE SIAM CYCLOPHORUS. Shell rather largely excavately umbilicated, depressly turbinated, solid, whitish beneath a scorched-yellow epidermis, copiously waved and clouded with chestnut-brown, unspotted around the umbilicus, whorls rounded, minutely grain-striated; aperture circular, lip strongly reflected, sometimes tinged with orange.

Cyclostoma Siamense, Sowerby, Thes. Conch. vol. i. p. 158*. pl. 31. a. f. 292, 293.

Cyclophorus Siamensis, Pfeiffer.

Hab. Siam? Khasia Hills, India; Theobald.

Mr. Benson inclines to doubt whether this magnificent species is really a native of Siam. Since Mr. Cuming's specimens were described, he has received specimens in equally fine condition, from the Khasia Hills, India.

Species 20. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS JERDONI. *Cycl. testā modicē umbilicatā, orbiculari, subdepressā, sub epidermide fulvā albā, castaneo-fusco sparsim obliquē lentiginosā, anfractibus densē carino-striatis, juxta suturas concavo-excavatis, deinde rotundatis, subcontractis; aperturā circulari, labro angustē reflexo, fulvo-aurantio.*

JERDON'S CYCLOPHORUS. Shell moderately umbilicated, orbicular, rather depressed, white beneath a fulvous epidermis, sparingly obliquely freckled with chestnut-brown, whorls densely keel-ridged, concavely excavated next the suture, then rounded, rather contracted; aperture circular, lip narrowly reflected, salmon-colour.

Cyclostoma Jerdoni, Benson, Ann. and Mag. Nat. Hist., Second Series, vol. viii. p. 185.

Cyclophorus Jerdoni, Pfeiffer.

Hab. Neilgherry Hills, India; Jerdon. Ceylon; Thwaites.

The type of this species is more copiously freckled with

chestnut-brown, than the specimen here figured, which is, however, a very characteristic form of it, collected by Mr. Thwaites in Ceylon.

Species 21. (Fig. *a, b*, Mus. Cuming.)

~~CYCLOSTOMA~~ PERDIX. *Cycl. testâ excavato-umbilicatâ, subdepresso-turbinatâ, albidâ, fulvo-castaneo undique reticulato-lentiginosâ, infra peripheriam obscurè fasciatâ, unfractibus subangustis, undique granoso-striatis et malleatis, juxta suturas subplanulatis, deinde rotundatis, ad peripheriam interdum obscurè carinatis; aperturâ obliquè circulari, labro expanso-reflexo, haud continuo, nunc albo, nunc aurantio.*

THE PARTRIDGE CYCLOSTOMA. Shell excavately umbilicated, rather depressly turbinated, whitish, reticulately freckled throughout with fulvous-chestnut, obscurely banded beneath the periphery, whorls rather

narrow, granosely striated and malleated throughout, slightly flattened next the sutures, then rounded, sometimes obscurely keeled at the periphery; aperture obliquely circular, lip expandedly reflected, not continuous, sometimes white, sometimes orange.

Cyclostoma perdix, Broderip and Sowerby, Zool. Journ. vol. v. p. 50.

Cyclostoma variegatum, Valenciennes.

Cyclophorus perdix, Pfeiffer.

Cyclostoma Zollingeri, Mousson.

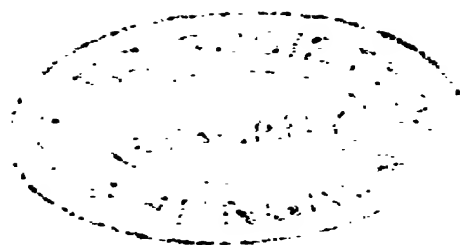
Cyclophorus Zollingeri, Pfeiffer.

Cyclostoma porphyriticum, Benson.

Cyclophorus porphyriticus, Pfeiffer.

Hab. Java; Mousson. East coast of Bay of Bengal. Pulo Penang; Benson.

This very pretty species may be chiefly recognized by the neat reticulated character of its painting.





22a



23b



24a



24b



25a



25b



26a



26b



27a

CYCLOPHORUS.

PLATE VI.

Species 22. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS PICTURATUS. *Cycl. testā modicē umbilicatā, subdepresso-turbinatā, rufo-castaneā, strigis fulvis parvis undatis profusē reticulatā, anfractibus angustis, lævibus vel obsoletē liris, juxta suturas declivi-planis, deinde rotundatis; aperturā parviusculā, labro incrassato, parum reflexo, versus umbilicum sublingulato.*

THE EMBROIDERED CYCLOPHORUS. Shell moderately umbilicated, rather depressly turbinated, profusely reticulated with small waved fulvous streaks, whorls narrow, smooth or obsoletely ridged, slopingly flattened next the sutures, then rounded; aperture rather small, lip thickened, but little reflected, slightly lingulate towards the umbilicus.

Cyclostoma picturatum, Pfeiffer, Pro. Zool. Soc. 1852, p. 62.

Cyclophorus picturatus, Pfeiffer.

Hab. Philippine Islands; Cuming.

The shell here figured, and not that figured in Küster's edition of Chemnitz, Conch. Cab. pl. 45. f. 13, 14, is the true type of the species in perfect condition. It is not improbable, however, that *C. picturatus*, *C. tigrinus*, and *C. linguiferus*, are all varieties of *C. validus*.

Species 23. (Fig. a, b, c, d, Mus. Cuming.)

CYCLOPHORUS VALIDUS. *Cycl. testā modicē umbilicatā, depresso-conoideā, ustulato-castaneā, supernē luteo-albido angustē fulguratā, subtilis immaculatā, anfractibus juxta suturas depressiusculis, deinde rotundatis, undique granoso-striatis et obsoletē liris, liris subdistantibus; aperturā circulari, labro calloso, parum reflexo, super umbilicum plus minus lingulato.*

THE STRONG CYCLOPHORUS. Shell moderately umbilicated, depressly conoid, burnt-chestnut, marked at the upper part with zigzag narrow yellowish-white streaks, unspotted beneath, whorls a little depressed next the sutures, then rounded, grain-striated and obsoletely ridged throughout, ridges rather distant; aperture circular, lip callous, but little reflected, more or less expanded into a tongue over the umbilicus.

Cyclostoma validum, Sowerby, Pro. Zool. Soc. 1842, p. 82.

Cyclophorus validus, Pfeiffer.

Cyclostoma linguiferum, Sowerby.

Cyclophorus linguiferus, Pfeiffer.

Hab. Philippine Islands; Cuming.

Mr. Sowerby described his *C. validum* from the specimen Fig. 23 c, d, in 1842, and in the following year he described his *C. linguiferum* from the specimens Fig. 23 a, b, in which the sculptured and tongue-like expansion of the lip are more developed. I believe them to be varieties of one species, collected in the intermediate states by Mr. Cuming at several of the Philippine Islands, and, as mentioned above, it is not improbable that *C. picturatus*, and even *C. tigrinus*, from the same locality, are also varieties of this species.

Species 24. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS VOLVULUS. *Cycl. testā subexcavato-umbilicatā, conico-globosā, solidā, fulvescente, castaneo variegatā, infra peripheriam latē fasciatā, anfractibus rotundatis, lævibus; aperturā circulari, labro callosoreflexo, albo.*

THE WHORL CYCLOPHORUS. Shell rather excavately umbilicated, conically globose, solid, fulvous variegated with chestnut, broadly banded beneath the periphery, whorls rounded, smooth; aperture circular, lip callously reflected, white.

Helix volvulus, Müller, Hist. Verm. vol. ii. p. 82.

Turbo lituus, Gmelin.

Cyclophorus volvulus, De Montford.

Cyclostoma volvulus pars, Lamarck.

Cyclostoma variegatum, Voigt.

Aperostoma volvulus, Troschel.

Cyclophorus exaltatus, Pfeiffer.

Hab. Pulo Condore, India. Hongkong, China.

The shell in Mr. Cuming's cabinet, lately described by Dr. Pfeiffer as *C. exaltatus*, is, in my opinion, a small *C. volvulus*. It was collected by Mr. Fortune at Hongkong.

Species 25. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS TIGRINUS. *Cycl. testā modicē umbilicatā, turbinatā, solidiusculā, sub epidermide fulvā albicante, purpureo-castaneo latē fulguratā, anfractibus supra granoso-liris et striatis, infra lævibus, juxta suturas subangulatis, declivibus, deinde rotundatis; aperturā*



26a



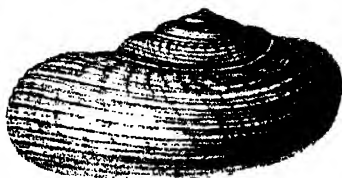
27b



27c



27d



28b



29a



29b



30b

CYCLOPHORUS.

PLATE VII.

Species 26. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS BOUCARDI. *Cycl. testâ subampliter perspective umbilicatâ, depresso-orbiculari, albidâ, epidermide fulvâ saturatius fasciatâ indutâ, versus apicem roseo-tinctâ, anfractibus undique densè rugoso-malleatis, subangustis, declivi-rotundatis; aperturâ circulari, parviusculâ, labro simplici.*

BOUCARD'S CYCLOPHORUS. Shell rather largely perspective-ly umbilicated, depressly orbicular, whitish, covered with a fulvous darker-banded epidermis, tinged with rose towards the apex, whorls densely rugosely malleated throughout, rather narrow, slopingly rounded; aperture circular, rather small, lip simple.

SALLÉ, Pfeiffer, Pro. Zool. Soc. 1856, p. 323. pl. 35. f. 25.
Hab. Cordova, Vera Cruz, Mexico; Sallé.

The colouring of this species resides in the epidermis. The surface is closely roughly indented throughout.

Species 27. (Fig. a, b, c, d, Mus. Cuming.)

CYCLOPHORUS CUMINGII. *Cycl. testâ amplissimè perspective umbilicatâ, subdiscoideâ, albâ, epidermide supra peripheriam latè nigricante-fusco fasciatâ indutâ, versus apicem roseâ, anfractibus angustis, rotundatis, juxta suturas depressis, undique densè spiraliter sulcatis; aperturâ obliquè circulari, labro simplici, haud continuo.*

CUMING'S CYCLOPHORUS. Shell very largely perspective-ly umbilicated, slightly discoid, white, covered with an epidermis, which forms a broad blackish-brown band above the periphery, rose towards the apex, whorls narrow, rounded, a little depressed next the sutures, closely spirally grooved throughout; aperture obliquely circular, lip simple, not continuous.

Cyclostoma Cumingii, Sowerby, Pro. Zool. Soc. 1832, p. 32.

Cyclostoma striatum, Lea.

Cyclophorus Cumingii, Pfeiffer.

Hab. Island of Tumaco, West Columbia; Cuming.

In this Central American type also, the colouring of the broad dark band resides only in the epidermis, the shell being pure white, tinged towards the apex with rose. In the specimen, Fig. 27 c, d, the band has nearly disappeared with the peeling off of the deciduous epidermis.

Species 28. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS PURUS. *Cycl. testâ latissimè perspective*

umbilicatâ, depressâ, albâ, anfractibus angustis, rotundatis, undique densè acutè spiraliter latis; aperturâ obliquâ, labro simplici, haud continuo.

THE PURE CYCLOPHORUS. Shell very broadly perspective-ly umbilicated, depressed, white, whorls narrow, rounded, densely spirally sharply ridged throughout; aperture oblique, lip simple, not continuous.

Cyclostoma purum, Forbes, Pro. Zool. Soc. 1850, p. 56. pl. 9. f. 9.

Cyclophorus purus, Pfeiffer.

Hab. Central America; Kellett and Wood.

This shell belongs to the same natural type as the preceding species, and may eventually prove to be a variety of it. It only differs from *C. Cumingii* in being more depressly convoluted, and in the spiral ridges being more prominently developed. Like that species, the shell is more white, with a very faint tinge of rose towards the apex, and it may very probably have a coloured deciduous epidermis. There is little doubt of its being a native of the same habitat, as it was collected by Captain Kellett and Lieutenant Wood during the surveying expedition of the 'Herald' and 'Pandora' on the coast of Ecuador.

Species 29. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS SEMISULCATUS. *Cycl. testâ ampliter excavato-umbilicatâ, solidulâ, depressâ, albâ, supernè fusco lentiginosâ, ad peripheriam fasciâ nigricante-fusciâ lineari cingulatâ, deinde pallidè fasciatâ, anfractibus angustis, rotundatis, spiraliter latis, juxta suturas concavo-planatis; aperturâ circulari, labro incrassato, continuo, haud reflecto.*

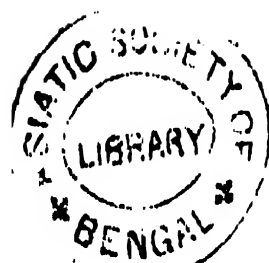
THE HALF-GROOVED CYCLOPHORUS. Shell largely excavately umbilicated, rather solid, depressed, white, freckled at the upper part with brown, encircled with a linear blackish-brown band, at the periphery, then faintly banded, whorls narrow, rounded, spirally ridged, concavely flattened next the suture; aperture circular, lip thickened, continuous, not reflected.

Cyclostoma semisulcata, Sowerby, Pro. Zool. Soc. 1843, p. 62.

Cyclophorus semisulcatus, Pfeiffer.

Hab. Malacca.

The linear blackish-brown band which encircles the species at the periphery remains prominent in varieties in which the freckled brown painting is almost obsolete.





30a



31a



32b



33a



34a



36b



37a



38b



39b

CYCLOPHORUS.

PLATE VIII.

Species 30. (Fig. a, b, Mus. Cuming.)

The shell here figured is Mr. Sowerby's var. *d* of *C. tigrinum*, characterized as having less conspicuous streaks, with the aperture orange-brown. The colouring of the aperture is more strictly a deep blood-colour, and the variety is very peculiar in this respect.

Cyclostoma labiosum, Pfeiffer, Pro. Zool. Soc. 1853, p. 51.
Hab. ———?

The under portion of this shell resembles that of *C. oculus-capri*, but the upper part is des- of the keel-like ridges which characterize that spec Can it be a smooth variety?

Species 31. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS CANALIFERUS. *Cycl. testā subampliter umbilicatā, conico-turbinatā, albidā, fusco marmoratā, versus apicem purpureo-roseā, infra peripheriam latē saturatē fusciatā, anfractibus densē latis et striatis, rotundatis, ad suturas profundē angustē canaliculatis; aperturā parviusculā, circulari, labro simplici, continuo, parum reflexo.*

THE CHANNELLED CYCLOPHORUS. Shell rather largely umbilicated, conically turbinated, whitish, marbled with brown, purple-rose towards the apex, broadly dark-banded below the periphery, whorls densely ridged and striated, rounded, deeply narrowly channelled at the sutures; aperture rather small, circular, lip thickened, continuous, but little reflected.

Cyclostoma canaliferum, Sowerby, Pro. Zool. Soc. 1843, p. 81.

Cyclophorus canaliferus, Pfeiffer.

Hab. Philippine Islands; Cuming.

Distinguished by a characteristic narrow sutural channel, arising from a dropping in the coiling of the whorls.

Species 32. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS LARIOSUS. *Cycl. testā excavato-umbilicatā, depresso-turbinatā, solidā, saturatē castaneā, lituris albidis sparsim aspersā, infra peripheriam saturatius latē fusciatā, circa umbilicum albā, anfractibus declivi-convezis, densē granoso-striatis; aperturā obliquā, labro incrassatim reflexo.*

THE LIPPED CYCLOPHORUS. Shell excavately umbilicated, depressly turbinated, solid, dark-chestnut, sparingly sprinkled with whitish marks, darker broad-banded below the periphery, white round the umbilicus, whorls slopingly convex, densely granosely striated; aperture oblique, lip thickly reflected.

Species 33. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS WOODIANUS. *Cycl. testā ampliter, umbilicatā, orbiculari, depressiusculā, flavescente, maculis grandibus purpureo-fuscis subquadratis juxta suturas pictā, ad peripheriam angustē tenuiatā, anfractibus angustis, spiraliter tenuilatis et striatis, juxta suturas plano-excavatis, deinde rotundatis; aperturā circulari, labro incrassato, parum reflexo, super umbilicum interdum lingulato.*

WOOD'S CYCLOPHORUS. Shell largely umbilicated, orbicular, rather depressed, yellowish, painted next the sutures with large square purple-brown blotches, narrowly filleted at the periphery; whorls narrow, spirally finely ridged and striated, flatly excavated next the sutures, then rounded; aperture circular, lip thickened, but little reflected, sometimes lingulate over the umbilicus.

Cyclostoma Woodianum, Lea, Trans. Amer. Phil. Soc. 1841, vol. vii. p. 465. pl. 12. f. 19.

Cyclostoma Tazonicum, Sowerby.

Cyclostoma Girouneri, Souleyet.

Cyclophorus Woodianus, Pfeiffer.

Cyclostoma Charpentieri, Mousson.

Cyclophorus Charpentieri, Pfeiffer.

Cyclostoma appendiculatum, Pfeiffer.

Cyclophorus appendiculatus, Pfeiffer.

Hab. Philippine Islands; Cuming. Java; Mousson.

Invariably characterized by a row of large purple-brown square blotches on the flattened ledge of the whorls next the sutures. Specimens with the lip lingulate have been separated by Pfeiffer under the name *C. appendiculatum*.

Species 34. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS DENSELINEATUS. *Cycl. testā modicē um-*

CYCLOPHORUS.—PLATE VIII.

bilicatā, globoso-turbinatā, solidā, pallidē fulvā, ustulato-castaneo fasciatim lentiginosā; anfractibus declivi-rotundatis, densè spiraliter granoso-liratis et striatis; aperturā circulari, labro incrassato, parum reflexo.

THE DENSELY LINEATED CYCLOPHORUS. Shell moderately umbilicated, globosely turbinated, solid, pale fulvous, freckled in a banded manner with burnt-chestnut; whorls slopingly rounded, densely spirally

granosely ridged and striated; aperture circular, lip thickened, but little reflected.

Cyclostoma denselineatum, Pfeiffer, Pro. Zool. Soc. 1852, p. 62.

Cyclophorus denselineatus, Pfeiffer.

Hab. — ?

A shell of solid growth, profusely freckled with burnt-chestnut colour on a fulvous ground, forming zigzag marks towards the apex.





35a



35c



35d



36a



37a



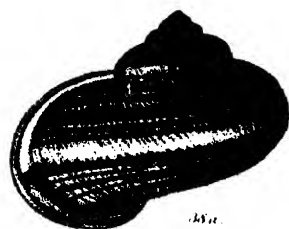
36b



35b



38b



35a

CYCLOPHORUS.

PLATE IX.

Species 35. (Fig. *a, b*, Mus. Cuming; Fig. *β, c*, Mus. Benson.)

CYCLOPHORUS FULGURATUS. *Cycl. testā modicè umbilicatā, subgloboso-turbinatā, albidā, strigis castaneis fulguratis transversim lentiginosā, infra peripheriam conspicuè fasciatā, deinde fulguratā, circa umbilicum immaculatā, anfractibus rotundatis, subinflatis, undique minutè granoso-striatis; aperturā circulari, labro nitidè reflexo, aurantio vel aurantio-rufo.*

THE LIGHTNING-MARKED CYCLOPHORUS. Shell moderately umbilicated, rather globosely turbinated, whitish, transversely freckled with zigzag chestnut streaks, conspicuously banded below the periphery, then zigzag-streaked, unspotted around the umbilicus, whorls rounded, rather inflated, everywhere minutely granosely striated; aperture circular, lip neatly reflected, orange or orange-red.

Cyclostoma fulguratum, Pfeiffer, Pro. Zool. Soc. 1852, p. 63.

Cyclophorus fulguratus, Pfeiffer.

Hab. Burmah.

This very interesting species has been collected in the British provinces of Burmah, of various sizes. The specimen represented at Fig. 35 *b, c*, is that referred to by Mr. Benson in the 'Annals and Magazine of Natural History,' 1856, vol. xvii. p. 232, with a "shining-orange peristome," collected by Mr. Theobald at Rangoon.

Species 36. (Fig. *a, b*, Mus. Benson.)

CYCLOPHORUS AURORA. *Cycl. testā modicè umbilicatā, globoso-turbinatā, tumidiusculā, albidā, fumeo-castaneo purpureo-lincto fasciatim nebulatā et lentiginosā, versus apicem livido-purpurascente, castaneo obscurè fulguratā, infra peripheriam fasciatā, deinde lineari-punctatā; anfractibus amplis, subinflatis, undique carino-liratis, liris obtusis, distantibus, interstitiis elevato-striatis; aperturā subcirculari, labro modicè reflexo, aurantio vel aurantio-rufo.*

THE AURORA CYCLOPHORUS. Shell moderately umbilicated, globosely turbinated, rather swollen, whitish, clouded and freckled in a banded manner with purple-tinged smoky-chestnut, livid-purple towards the apex, obscurely zigzag-marked with chestnut, banded below the periphery, then linearly dotted,

whorls large, rather inflated, keel-ridged throughout, ridges obtuse, distant, interstices elevately striated; aperture nearly circular, lip moderately reflected, orange or orange-red.

Cyclostoma Aurora, Benson, Ann. and Mag. Nat. Hist. Second Series, 1851, vol. viii. p. 186.

Cyclophorus Aurora, Pfeiffer.

Hab. Darjiling, Sikkim-Himalaya.

Doubts were entertained of the value of this species originally, and it was figured by Pfeiffer in Küster, Conch. Cab. pl. 50. f. 11 to 12, as a variety of his *C. stenomphalus*. The shell represented at Fig. 36 *a, b*, is one of a very characteristic series of specimens which Mr. Benson has since received from Sikkim-Himalaya, and all doubt on the subject is now removed.

Species 37. (Fig. *a, b*, Mus. Benson.)

CYCLOPHORUS CRYPTOMPHALUS. *Cycl. testā modicè excavato-umbilicatā, subgloboso-turbinatā, solidiusculā, albidā, fulco-castaneo fulguratā et fasciatim nebulatā, ad peripheriam immaculatā, deinde latifasciatā, circa umbilicum immaculatā, anfractibus rotundatis, obscurè granoso-striatis, juxta suturas subdepressis; aperturā subcirculari, labro incrassatum reflexo, super umbilicum lingulatā.*

THE HID-UMBILICUS CYCLOPHORUS. Shell moderately excavately umbilicated, somewhat globosely turbinated, rather solid, whitish, zigzag-marked and clouded in a banded manner with fulvous-chestnut, unspotted at the periphery, then broadly banded, unspotted round the umbilicus, whorls rounded, obscurely grain-striated, a little depressed next the suture; aperture nearly circular, lip thickly reflected, lingulate over the umbilicus.

BENSON, Ann. and Mag. Nat. Hist., Second Series, 1857, vol. xix. p. 206.

Hab. Ava, Burmah; Oldham.

This species is founded on the single specimen represented in the accompanying Plate, collected in the above-named locality by Mr. Oldham, Chief of the Geological Survey of India. It is rather damaged, but retains all the properties of the species. I cannot refer it to any other known *Cyclophorus*.

CYCLOPHORUS.—PLATE IX.

Species 38. (Fig. a, b, Mus. Benson.)

CYCLOPHORUS BENSONI. *Cycl. modicè umbilicatâ, subglobozo-turbinatâ, albidâ, castaneo sparsim lineari-lentiginosâ, versus apicem tenuè fulguratâ, infra peripheriam conspicuè angustè fasciatâ, spirâ elevatiusculâ, anfractibus rotundatis, subinflatis, densè granoso-striatis, ad peripheriam interdum obscurè carinatis; aperturâ ferè circulari, labro eleganter reflexo, vividè aurantio.*

BENSON'S CYCLOPHORUS. Shell moderately umbilicated, somewhat globosely turbinated, whitish, sparingly linearly freckled with chestnut, finely zigzag towards the apex, conspicuously narrowly banded below the periphery, spire somewhat raised, whorls rounded, slightly inflated, densely grain-striated, sometimes obscurely keeled; aperture nearly circular, lip elegantly reflected, bright-orange.

Cyclostoma Bensoni, Pfeiffer, Pro. Zool. Soc. 1852, p. 158.
Hab. Assam, north of the Khasia range, India.

Very closely allied to *C. Pearsoni*, but of lighter colour, as may be seen by a comparison of our very characteristic figures of each species, and the whorls are rather more rotundately inflated. Specimens of *C. Bensoni* before me, from the collections of Mr. Cuming and Mr. Benson, by the side of Mr. Benson's type-specimen of *C. Pearsoni*, together with several of that species collected on the Khasia Hills by Dr. Hooker, confirm these slight differences without showing any intermediate gradation. One of the most obvious differential characters in *C. Pearsoni* is the constant presence on the periphery of a sharply-defined narrow pale band resting on the dark one.





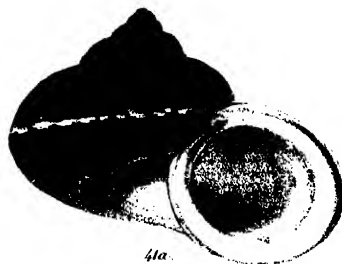
39a.



40a



40b



41a.



41b



42b



41b



42d.



39b.

CYCLOPHORUS.

PLATE X.

Species 39. (Fig. *a, b*, Mus. Cuming.)

CYCLOPHORUS TÆNIATUS. *Cycl. testā subangustā umbilicatā, orbiculari, fulvescente-albā, atro-fuscō profusē lineari-fusciatā et punctatā, anfractibus subangustis, densē obliquē striatis, infra peripheriam obtusē carinatis; aperturā subcirculari, labro vix reflexo.*

THE FILLETED CYCLOPHORUS. Shell rather narrowly umbilicated, orbicular, fulvous-white, profusely linearly banded and dotted with dark brown, whorls rather narrow, densely obliquely striated, obtusely keeled below the periphery; aperture nearly circular, lip scarcely reflected.

Cyclostoma tæniatum, Pfeiffer, Pro. Zool. Soc. 1854, p. 301.

Hab. Sumatra.

The bands of this species are strongest marked below the periphery. It comes very near to *C. turgidus*.

Species 40. (Fig. *a, b*, Mus. Cuming.)

CYCLOPHORUS AMÆNUS. *Cycl. testā modicē excavato-umbilicatā, solidā, albā, punctis sagittiformibus fulvo-castaneis undique lineari-fusciatā, anfractibus rotundatis, obliquē tenuistriatis, ad peripheriam obscurē carinatis; aperturā circulari, labro incrassato, calloso-reflexo.*

THE DELICATE CYCLOPHORUS. Shell moderately excavately umbilicated, solid, white, linearly banded throughout with arrow-headed fulvous-chestnut dots, whorls rounded, finely obliquely striated, obscurely keeled at the periphery; aperture circular, lip thickened, callously reflected.

Cyclostoma amœnum, Pfeiffer, Pro. Zool. Soc. 1852, p. 62.

Cyclophorus amœnus, Pfeiffer.

Hab. — ?

A comparatively smooth shell, of solid growth, encircled with numerous close-set fillets of chestnut arrow-headed dots.

Species 41. (Fig. *a, b*, Mus. Benson.)

CYCLOPHORUS THEOBALDIANUS. *Cycl. testā modicē excavato-umbilicatā, depresso-turbinatā, solidā, crassā, albidā, rufo-castaneo copiosē nebulatā et fasciatā, versus*

apicem fulguratā, zonā pallidā angustā ad peripheriam, circa umbilicem immanulatā, anfractibus declivi-rotundatis, undique vixitē densē granoso-striatis; aperturā obliquē circulari, labro incrassatim calloso-reflexo.

THEOBALD'S CYCLOPHORUS. Shell moderately excavately umbilicated, depressly turbinated, solid, thick, whitish, copiously clouded and banded with reddish-chestnut, zigzag-marked towards the apex, a narrow pale zone at the periphery, unspotted round the umbilicus; whorls slopingly rounded, strongly densely grain-striated throughout; aperture obliquely circular, lip thickly callously reflected.

BENSON, Ann. and Mag. Nat. Hist., Second Series, 1857, vol. xix. p. 206.

Hab. Thyet-Mio, Burmah (found near the right bank of the Irawadi River); Theobald.

A fine solid strongly grain-striated shell, of the same typical character as *C. anrauliacus*, from the neighbouring district of Tenasserim; it is, however, very much less excavately umbilicated.

Species 42. (Fig. *a, b, c, d*, Mus. Cuming.)

CYCLOPHORUS MENKEANUS. *Cycl. testā modicē umbilicatā, depresso-turbinatā, solidiusculā, fulvo-fuscā vel atro-purpureā, plus minus obscurē fulguratā, infra peripheriam saturatē fusciatā, anfractibus densē liralibus et striatis, juxta suturas planatis, deinde rotundatis; aperturā ferē circulari, labro incrassato, parum reflexo.*

MENKE'S CYCLOPHORUS. Shell moderately umbilicated, depressly turbinated, rather solid, fulvous-brown or dark-purple, more or less obscurely zigzag-marked, darker banded below the periphery, whorls densely ridged and striated, flattened next the sutures, then rounded; aperture nearly circular, lip thickened, but little reflected.

Cyclostoma Menkeanum, Philippi, Zeitschr. für Malac. 1847, p. 123.

Cyclophorus Menkeanus, Pfeiffer.

Cyclostoma Ceylanicum, Sowerby.

Cyclophorus Ceylanicus, Pfeiffer.

Hab. Ceylon (near Point de Galle); Benson.

Fig. 42 *a, b* is a very conspicuous richly-marbled variety.





CYCLOPHORUS.

PLATE XI.

Species 43. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS TURGIDUS. *Cycl. testā subangustè umbilicatā, depresso-pyramidalī, ustulato-fulvā, punctis castaneis sagittiformibus cingulatā, infra peripheriam latifasciatā, anfractibus densè obliquè striatis, rotundatis, ultimo infra peripheriam abruptè angulato et carinato; aperturā circulari, fauce fulvescente-aurantiā; labro incrassato, viz reflexo.*

THE TURGID CYCLOPHORUS. Shell rather narrowly umbilicated, depressly pyramidal, burnt-fulvous colour, encircled with rows of arrow-headed chestnut dots, broadly banded below the periphery, whorls densely obliquely striated, rounded, last whorl abruptly angled and keeled below the periphery; aperture circular, salmon-coloured within, lip thickened, scarcely reflected.

Cyclostoma crassum, Pfeiffer (not of Adams), Pro. Zool. Soc. 1851.

Cyclostoma turgidum, Pfeiffer, in Küster, Conch. Cab. p. 257. pl. 35. f. 15, 16.

Cyclophorus turgidus, Pfeiffer.

Hab. Bashee Islands, Eastern Archipelago.

Distinguished in a characteristic manner by the abrupt angularity of the last whorl.

Species 44. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS CUCULLATUS. *Cycl. testā angustè umbilicatā, depresso-turbinatā, solidā, albidā, fasciis perpaucis linearibus fuscis interruptis ornatā, anfractibus declivi-rotundatis, levibus; aperturā obliquè circulari, labro in unguem elongato.*

THE HOODED CYCLOPHORUS. Shell narrowly umbilicated, depressly turbinated, solid, white, marked with a few interrupted linear brown bands, whorls slopingly rounded, smooth; aperture obliquely circular, lip elongated into a nail.

GOULD, MS.; Pfeiffer, Mon. Pneumon. Supp. p. 44.

Hab. Mergui, Burmah.

This is a very distinct and well-marked species, apart from the singularity of the nail-like extension of the lip. It would appear to be merely an accidental growth, but all the specimens hitherto known of the species are alike in this respect.

Species 45. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS AQUILUS. *Cycl. testā excavato-umbilicatā, subtransversè turbinatā, depressiusculā, solidā, fulvā, rufo-castaneo marmoratā et fuscicatā, juxta suturas maculatā, anfractibus supernè convexo-declivibus, deinde rotundatis; aperturā subquadratā, labro latè crassè reflexo.*

THE SWARTHY CYCLOPHORUS. Shell excavately umbilicated, somewhat transversely turbinated, rather depressed, solid, fulvous, marbled and banded with reddish-chestnut, blotched next the suture, whorls convexly sloping round the upper part, then rounded; aperture somewhat square, lip broadly thickly reflected.

Cyclostoma aquilum, Sowerby, Pro. Zool. Soc. 1843, p. 61.

Cyclostoma subtrochiforme, Souleyet.

Cyclophorus aquilus, Pfeiffer.

Hab. Singapore; Cuming. China; Mus. Brit.

The excavated character of the under surface of the last whorl, bordering the umbilicus, imparts to the aperture a peculiar square form.

Species 46. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS ZEBRINUS. *Cycl. testā angustè excavato-umbilicatā, subtransversè orbiculari, depressā, fulvā, maculis latīs castaneis strigisque undatis irregulariter variegatā, anfractibus spirāliter carino-latis et obliquè subsquamoso-striatis, supernè declivi-convexis, infernè acutè angulatis et carinatis; aperturā circulari, labro crassè reflexo.*

THE ZEBRA-MARKED CYCLOPHORUS. Shell narrowly excavately umbilicated, somewhat transversely orbicular, depressed, fulvous, irregularly variegated with broad chestnut blotches and waved streaks, whorls spirally keel-ridged, and obliquely squamosely striated, slopingly convex round the upper part, sharply angled and keeled at the lower; aperture circular, lip thickly reflected.

Cyclostoma zebrium, Benson, Journ. Asiatic Soc., Calcutta, 1836, vol. v. p. 355.

Cyclophorus zebrium, Pfeiffer.

Hab. Khasia Hills, India.

A peculiarly-blotched shell, of the same slopingly angled

CYCLOPHORUS.—PLATE XI.

typical form as the smaller *C. lingulatus*, of which Mr. Cuming collected so many well-marked varieties at the Philippine Islands.

Species 47. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS LURIDUS. *Cycl. testā modicè umbilicatā, subdepresso-turbinatā, tenuiculā, pellucido-fulvā, purpureo-fusco linctā, immaculatā, anfractibus spiraliter carino-liratis et striatis, supernè declivi-convexis, ad peripheriam obtusè angulatis; aperturā ferè circulari, labro vix reflexo.*

THE LURID CYCLOPHORUS. Shell moderately umbilica-

ted, somewhat depressly turbinated, rather thin, transparent, fulvous, tinged with purplish-brown, unspotted, whorls spirally keel-ridged and striated, slopingly convex round the upper part, obtusely angled at the periphery; aperture nearly circular, lip scarcely reflected.

Cyclotoma luridum, Pfeiffer, Pro. Zool. Soc. 1852, p. 63.

Cyclophorus luridus, Pfeiffer.

Hab. — ?

This appears to me to be an obscure state of some better developed form, yet I cannot refer it to any other described species.



49a



48a



49b



50a



49c



51a



48b



51c

CYCLOPHORUS.

PLATE XII.

Species 48. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS IBYATENSIS. *Cycl. testā modicè umbilicatā, orbiculari, albidā, versus apicem livido-purpureā, castaneo copiosè tinctā et undato-strigatā, maculis grandibus sagittiformibus infra peripheriam fasciatā; anfractibus declivi-convexis, obliquè minutè dense striatis; aperturā circulari, parviusculā, labro vix reflexo.*

THE IBYAT CYCLOPHORUS. Shell moderately umbilicated, orbicular, whitish, livid-purple towards the apex, copiously stained and wave-streaked with chestnut, banded below the periphery with large arrow-headed spots; whorls slopingly convex, obliquely minutely densely striated; aperture circular, rather small, lip scarcely reflected.

Cyclostoma Ibyatense, Pfeiffer, Pro. Zool. Soc. 1852, p. 62.

Cyclophorus Ibyatensis, Pfeiffer.

Hab. Island of Ibyat, Bashees, Eastern Archipelago.

Of simple form, unusually copiously painted.

Species 49. (Fig. a, b, c, d, Mus. Cuming.)

CYCLOPHORUS LINGULATUS. *Cycl. testā modicè excavato-umbilicatā, depresso-conoidē, tenuiculā, interdum semipellucidā, castaneā, ad suturas et peripheriam albo-articulatā, interdum albā, castaneo articulatā; anfractibus subangustis, juxta suturas planatis, deinde rotundatis, laevibus vel minutè decussatim striatis, ad peripheriam carino-funiculatis; aperturā circulari, labro plano-reflexo, versus umbilicum plerumque lingulato.*

THE LINGULATE CYCLOPHORUS. Shell moderately excavately umbilicated, depressly conoid, rather thin, sometimes semitransparent, chestnut, articulated with white next the sutures, and at the periphery, sometimes white, articulated with chestnut; whorls rather narrow, flattened next the sutures, then rounded, smooth or minutely decussately striated, encircled at the periphery with a cord-like keel; aperture circular, lip flatly reflected, generally lingulate towards the umbilicus.

Cyclostoma lingulatum, Sowerby, Pro. Zool. Soc. 1843, p. 64.

Cyclophorus lingulatus, Pfeiffer.

Hab. Philippine Islands; Cuming.

Of this interesting species Mr. Cuming collected several

varieties in the Philippine Islands in comparative abundance. One of its most obvious characters is the presence of a delicately articulated cord-like keel at the periphery.

Species 50. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS BORNEENSIS. *Cycl. testā subampliter umbilicatā, convexo-depressā, tenuiculā, fulvā, rufo-castaneo sparsim variegatā, juxta suturas versus apicem maculatā; anfractibus superne convexo-declivibus, arcuatis circato-striatis, ad peripheriam acutè carinatis; aperturā subcirculari, labro parum reflexo.*

THE BORNEO CYCLOPHORUS. Shell rather largely umbilicated, convexly depressed, rather thin, fulvous, sparingly variegated with reddish-chestnut, spotted next the sutures towards the apex; whorls convexly sloping at the upper part, arcuately elevately striated, sharply keeled at the periphery; aperture nearly circular, lip but little reflected.

Cyclostoma Borneense, Metcalfe, Pro. Zool. Soc. 1851, p. 71.

Hab. Borneo.

A light angularly keeled shell, with the spire more depressly immersed than in any other of the allied forms of the genus.

Species 51. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS PUNCTATUS. *Cycl. testā modicè umbilicatā, subgloboso-turbinatā, pallidè lutescente, punctis sagittiformibus fuscis obscure seriatim cinctā, fuscā intensā conspicuā infra peripheriam; anfractibus rotundatis, obliquè dense striatis; aperturā circulari, labro reflexo.*

THE DOTTED CYCLOPHORUS. Shell moderately umbilicated, rather globosely turbinated, pale yellow, encircled with rows of faint brown arrow-headed dots, with a dark conspicuous band below the periphery; whorls rounded, obliquely densely striated; aperture circular, lip reflected.

Cyclostoma punctatum, Grateloup, Act. Linn. Soc. Bordeaux, vol. xi. p. 440. pl. 3. f. 10.

Hab. Ceylon; Grateloup. Philippine Islands; Cuming.

There are varieties of this species a little streaked, but it is mostly only lightly dotted; the band being equally conspicuous.



CYCLOPHORUS.

PLATE XIII.

Species 52. (Fig. a, b, Mus. Benson.)

CYCLOPHORUS FOLIACEUS. *Cycl. testâ angustè subobtectè umbilicatâ, pyramidalit-turbinatâ, solidiusculâ, pellucido-albâ, versus apicem vividè purpureo-roseâ, epidermide fuscescente deciduâ; anfractibus subangustis, rotundalis, spiralliter inciso-striatis, ultimo versus aperturam plus minus irregulariter varicoso; aperturâ circulari, labro reflexo.*

THE LEAFY CYCLOPHORUS. Shell with a narrow partially covered umbilicus, pyramidally turbinated, rather solid, transparent white, bright purple-rose towards the apex, with a deciduous brownish epidermis; whorls rather narrow, round, spirally incisely striated, more or less irregularly varicose towards the aperture; aperture circular, lip reflected.

Turbo foliaceus, Chemnitz, Conch. Cab. vol. ix. part ii. p. 59. pl. 123. f. 1069, 1070.

Cyclostoma foliaceum, Pfeiffer in Kuster, Conch. Cab. *Cyclophorus foliaceus*, Benson.

Hab. Andaman Islands, Bay of Bengal; Captain Haughton.

We are indebted to Mr. Benson for having correctly determined both the genus and species of this long-lost shell from specimens containing horny opercula, two of which are figured in our plate, lately collected by Captain Haughton at one of the Andaman Islands. It was admirably figured between seventy and eighty years ago by Chemnitz, but the figures of the 'Conchylien Cabinet' have been regarded as representing worn specimens of the well-known *Otopoma Naticoides* from Socotra, which has a shelly operculum. Dr. Pfeiffer separated it from that species in 1846 in his monograph of *Cyclostoma* in Kuster's edition of the 'Conchylien Cabinet,' but in his subsequent monographs he abandoned that view, and quoted it as a synonym of *O. Naticoides*. Mr. Benson's discovery confirming the original species of Chemnitz, was made known in the 'Annals and Magazine of Natural History' for February, 1860, and January, 1861. It will be seen that Mr. Benson's specimens are smaller than that figured by Chemnitz, but he thinks it probable that larger specimens may be found when the exploration of the main island of the group can be safely attempted. The varicose repetition of the lip appears to be a constant character of the species.

Species 53. (Fig. a, b, Mus. Benson.)

CYCLOPHORUS EXILIS. *Cycl. testâ subangustè contractè umbilicatâ, globoso-turbinatâ, pellucido-albâ, epidermide fuscescente deciduâ, rufo-fusco tenuè flammâtâ; anfractibus supra plano-declivibus, deinde convexis, spiralliter validè firmiter et striatis; aperturâ subcirculari, labro tenuè expanso.*

THE EXILE CYCLOPHORUS. Shell rather narrowly contractedly umbilicated, globosely turbinated, rather thin, transparent white, with a deciduous brownish epidermis, thinly flamed with red-brown; whorls flatly sloping above, then convex, spirally strongly ribbed and striated; aperture nearly circular, lip thinly expanded.

BENSON, Ann. and Mag. Nat. Hist., 1854, vol. xiv. p. 412.

Hab. Bhamoury, foot of the Western Himalaya, bordering on Rohilkund; Captain Boys.

Mr. Benson describes *C. exilis* as being the most northerly *Cyclophorus* known. It comes very near to *C. alliengus*, and as no other specimen has been pronounced to belong to the species but the one here figured, it needs confirmation. Its more northerly habitat would account in some measure for the shell being of lighter and more transparent substance.

Species 54. (Fig. a, b, Mus. Benson.)

CYCLOPHORUS CANTORI. *Cycl. testâ modicè umbilicatâ, subgloboso-turbinatâ, albidâ, fusco minutè undulato-marmoratâ, infra peripheriam fasciatâ; anfractibus lævibus, sub lente decussatim striatis, supra planulatis, deinde convexis, ad peripheriam obscurè angulatis; aperturâ circulari, labro incrassatim reflexo, late plano-expanso.*

CANTOR'S CYCLOPHORUS. Shell moderately umbilicated, somewhat globosely turbinated, whitish, minutely wave-marbled with brown, banded below the periphery; whorls smooth, decussately striated beneath the lens, flattened above, then convex, obscurely angled below the periphery; aperture circular, lip thickly reflected, broadly flatly expanded.

Cyclostoma Cantori, Benson, Ann. and Mag. Nat. Hist., 1851, vol. viii. p. 186.

Cyclophorus Cantori, Pfeiffer.

Hab. Island of Pulo-Penang, west coast of Malacca;
Dr. Cantor.

The specimen of *C. Cantori* here figured is the original type collected by Dr. Cantor, and described by Mr. Benson in 1851. The shells of much larger size in Mr. Cum-
ing's collection referred to *C. Cantori* by Dr. Pfeiffer, ap-
pear to me to be a distinct species, see *C. Pfeifferi*, pl. 3.
f. 11 a, b.

Species 55. (Fig. a, b, Mus. Benson.)

CYCLOPHORUS ALTIWAGUS. *Cycl. testā angustē subobtectā
umbilicatā, globoso-turbinatā, albidā, rufo-fusco plus
minus tinctā et nebuloso-flammātā, infra peripheriam
saturatiore, circa umbilicum lineatā; anfractibus spi-
raliter latis et striatis, tumidiusculis, supra plano-
declivibus, deinde rotundatis; aperturā subcirculari,
labro tenuē reflexo, juxta umbilicum sublingulato.*

THE LOFTY-WANDERING CYCLOPHORUS. Shell with a
narrow rather covered umbilicus, globosely turbi-
nated, whitish, more or less stained, and cloudedly
flamed with red-brown, darker below the periphery,
lineated around the umbilicus; whorls spirally ridged
and striated, rather swollen, flatly sloping above,
then rounded; aperture nearly circular, lip thinly re-
flected, slightly tongued next the umbilicus.

BENSON, Ann. and Mag. Nat. Hist. 1854, vol. xiv. p. 411.
Hab. Mahabuleswar Hills, south of Poonah, Hindoo-
stan; Lieut. A. E. Benson.

The principle of natural selection, which Dr. Hooker
inclines to apply, after the manner of Darwin, to the plants
of the country of the *Cyclophori*, would not allow of *C.
altivagus* and *C. exul* being regarded as species distinct
from *C. aurora*. The theorists in that direction might
even go further, and say that *C. pyrotrema*, *stenomphatum*,
and *Indicus* were only so many more modifications of the
same species. We give them *quantum valeant*; it re-
mains for a future and wiser generation to settle the diffi-
culties in regard to the determination of kind, which is
turning the heads of some of our most able naturalists.

Species 56. (Mus. Cumming.)

CYCLOPHORUS LEUCOSTOMA. *Cycl. testā modicē umbili-*

*cath, subdepresso-turbinatā, ferrugineo-fusca, supra
albo fulguratā; anfractibus subangustis, rotundatis,
spiraliter latis et striatis; aperturā circulari, labro
parum reflexo.*

THE WHITE-MOUTH CYCLOPHORUS. Shell moderately
umbilicated, rather depressly tumbrinated, rust-brown,
lightning-marked with white about the upper part;
whorls rather narrow, rounded, spirally ridged and
striated; aperture circular, lip but little reflected.

PFEIFFER, Monog. p. 73.

Hab. — ?

This shell has a strong relationship with *C. validus*, and
nothing is known of its habitat.

Species 57. (Mus. Cumming.)

CYCLOPHORUS TURBO. *Cycl. testā imperforatā, Trochi-
formi, solidā, rufescente-albā, fusco undique lentigi-
nosā; anfractibus levibus, declivi-convezis, ultimo ad
peripheriam tenuicarinato, sublus planulato; aperturā
subquadratā, labro incrassato, aurantio tincto, margini-
bus callosis, remotis, columellari in laminam appressum
expanso, interdum in tuberculum desinente.*

THE TOP CYCLOPHORUS. Shell imperforate, Trochus-
shaped, solid, reddish-white, everywhere freckled with
brown; whorls smooth, slopingly convex, the last
thinly keeled at the periphery, flattened beneath;
aperture somewhat square, lip thickened, tinged with
orange, margins callous, removed, columellar margin
expanded into an appressed lamina, sometimes end-
ing in a tubercle.

Trochus turbo, Chemnitz, Conch. Cab. vol. ii. part ii. p. 53.
pl. 122. f. 1059.

Helix turbo, Gmelin.

Cyclostoma turbo, Say.

Cyclophorus turbo, Pfeiffer.

Cyclophorus Nicobaricus, Behn.

Hab. Tranquebar, Nicobar, Sumatra.

Well distinguished by its solid trochiform shape and
callous columellar margin projected across and entirely
filling up the seat of the umbilicus.



59



60



61



62 b



63



64



64 b



65

CYCLOPHORUS.

PLATE XIV.

Species 58. (Mus. Cuming.)

CYCLOPHORUS Plicatus. *Cycl. testā subangustè profundè umbilicatā, obtusè conoideā, solidiusculā, sordidè albā; anfractibus declivibus, validè obliquè rugoso-plicatis, spiritaliter striatis, ad basin subangulatis; aperturā parvā, circulari, labro simplici.*

THE PLEATED CYCLOPHORUS. Shell rather narrowly deeply umbilicated, obtusely conoid, rather solid, dead white; whorls sloping, strongly obliquely wrinkle-plaited, spirally striated, slightly angled at the base; aperture small, circular, lip simple.

Cyclostoma plicatum, Gould, Pro. Bost. Soc. Nat. Hist. 1847, p. 204.

Cyclostoma Apiaë, Recluz.

Cyclostoma pulverulentum, Philippi.

Hab. Island of Samoe, South Seas.

A small Trochus-like species of solid growth, obliquely wrinkle-plaited throughout. The name *plicatum* has been given to a fossil species of *Cyclostoma*, but that seems hardly sufficient to invalidate the priority of Dr. Gould's description, referring, as it does, to *Cyclophorus*.

Species 59. (Mus. Cuming.)

CYCLOPHORUS FLAVUS. *Cycl. testā perangustè profundè umbilicatā, conico-globosā, flavā; anfractibus spiraliter confertim sulcatis, juxta suturas depressis, deinde tumido-convexis; aperturā subpyriformi, amplā, labro simplici.*

THE YELLOW CYCLOPHORUS. Shell very narrowly deeply umbilicated, conically globose, yellow; whorls spirally closely grooved, depressed next the sutures, then tumidly convex; aperture somewhat pear-shaped, large, lip simple.

Cyclostoma flavum, Broderip, Pro. Zool. Soc. 1832, p. 59.

Chondropoma flavum, Gray.

Cyclophorus flavus, Pfeiffer.

Hab. Island of Annae, Pacific Ocean (at the roots of palm-trees); Cuming.

A small strongly grooved species with somewhat of the aspect of a *Littorina*.

Species 60. (Mus. Cuming.)

CYCLOPHORUS MARGARITA. *Cycl. testā subangustè um-*

bilicatā, globoso-conicā, subinflatā, tenuè pellucidā, aurantio-corneā, apice rosā; anfractibus levibus, declivi-convexis; aperturā subpyriformi-ovalē, labro simplici.

THE PEARL CYCLOPHORUS. Shell rather narrowly umbilicated, globosely conical, rather inflated, thin, transparent, orange-horny, rose at the apex; whorls smooth, slopingly convex; aperture somewhat pyriformly ovate, lip simple.

Cyclostoma margarita, Pfeiffer, Pro. Zool. Soc. 1851, p. 244.

Hab. Island of Rapa, Pacific Ocean; Cuming.

This is not spirally grooved like the preceding species, but of a smooth semitransparent golden-horny substance pink at the apex.

Species 61. (Mus. Cuming.)

CYCLOPHORUS TURBINATUS. *Cycl. testā modicè excavato-umbilicatā, depresso-turbinatā, fulvidā, juxta suturas obsolete fusco-punctatā; anfractibus subquadrato-convexis, spiraliter confertissimè striatis, et hic illic carinatis; aperturā circulari, labro reflexo.*

THE TURBINATED CYCLOPHORUS. Shell moderately excavately umbilicated, depressly turbinated, fulvous, obsoletely brown-dotted, next the sutures; whorls rather squarely convex, spirally very closely striated, here, and there keeled; aperture circular, lip reflected.

Cyclostoma Helicoides, Sowerby (not of Grateloup), Pro. Zool. Soc. 1843, p. 65.

Cyclostoma turbinatum, Pfeiffer.

Cyclophorus turbinatus, Pfeiffer.

Hab. Island of Bohol, Philippines; Cuming.

This species is scarcely distinguished from *C. Guimaraensis*, to which it is in all respects closely allied, except by its strongly marked raised spiral striae.

Species 62. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS ATRAMENTARIUS. *Cycl. testā subangustè umbilicatā, solidiusculā, livido-purpureā, cærulescente tinctā, fusco sparsim flammātā; anfractibus angustis, superne subplanulatis, deinde convexis; aperturā circulari, labro tenuè plano-expanso.*

THE INKY CYCLOPHORUS. Shell rather narrowly umbilicated, rather solid, livid-purple, tinged with blue, sparingly flamed with brown; whorls narrow, rather flattened above, then convex; aperture circular, lip thinly flatly expanded.

Cyclostoma atramentarium, Sowerby, Thes. Conch. p. 128. pl. 30. f. 236.

Cyclolus atramentarius, Gray.

Cyclophorus atramentarius, Pfeiffer.

Hab. —?

Nothing is known of the habitat of this species, but it is a very characteristic one, distinguished by a peculiar livid-purple inky hue.

Species 63. (Mus. Cuming.)

CYCLOPHORUS GULMARASENSIS. *Cycl. testā subangustè excavato-umbilicatā, tenniculā, fulvescente, castaneo-fusco juxta suturas maculatā, medio lentiginosā, ad peripheriam articulatā, infra saturatè tinctā; anfractibus supernè planulatis, medio convexis et spiraliter latis; aperturā ferè circulari, labro tenuè reflexo.*

THE GUIMARAS CYCLOPHORUS. Shell rather narrowly excavately umbilicated, somewhat thin, fulvous, spotted next the sutures with fulvous chestnut, freckled in the middle, articulated at the periphery, dark-stained below it; whorls flattened at the upper part, convex and spirally ridged in the middle; aperture almost circular, lip thinly reflected.

Cyclostoma Guimarasense, Sowerby, Thes. Conch. p. 131. pl. 31. f. 274, 275.

Cyclophorus Guimarasensis, Gray.

Hab. Island of Guimaras, Philippines; Cuming.

A prettily articulated species of a rather light semi-transparent substance.

Species 64. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS PHILIPPINARUM. *Cycl. testā perangustè umbilicatā, globoso-conicā, solidā, albidā, rufo-fusco minutè reticulato-lentiginosā, ad suturas conspicuè angustè maculatā, ad peripheriam albidā, deinde saturatè fasciatā; anfractibus spiraliter densè latis, ad suturas*

angustè canaliculatis; aperturā parviusculā, ferè circulari, labro reflexo.

THE PHILIPPINE CYCLOPHORUS. Shell very narrowly umbilicated, globosely conical, solid, whitish, minutely reticulately freckled with red-brown, conspicuously narrowly spotted at the sutures, whitish at the periphery, then dark-banded; whorls spirally densely ridged, narrowly channelled at the sutures; aperture rather small, circular, lip reflected.

Cyclostoma Philippinarum, Sowerby, Pro. Zool. Soc. 1842, p. 83.

Cyclophorus Philippinarum, Pfeiffer.

Hab. Philippine Islands; Cuming.

A very good distinguishing character of this species is that of the sutures being channelled, the sutural dark spots being sunk in the channel.

Species 65. (Mus. Cuming.)

CYCLOPHORUS ZEBRA. *Cycl. testā perangustè umbilicatā, globoso-conicā, albidā, castaneo-fusco plus minus tinctā et fasciatā, juxta suturas subobscurè maculatā; anfractibus convexis, spiraliter subremotè carinatis, juxta suturas subcanaliculatis; aperturā parviusculā, ferè circulari, labro calloso-reflexo.*

THE ZEBRA CYCLOPHORUS. Shell very narrowly umbilicated, globosely conical, whitish, more or less stained and banded with chestnut-brown, somewhat obscurely spotted next the sutures; whorls convex, spirally rather distantly keeled, faintly channelled next the sutures; aperture rather small, nearly circular, lip callously reflected.

Cyclostoma zebra, Grateloup, Act. Soc. Nat. Hist. Bordeaux, vol. ii. p. 441. pl. 3. f. 9.

Cyclostoma Philippinarum, var., Sowerby.

Cyclophorus zebra, Pfeiffer.

Hab. Philippine Islands; Cuming.

Exactly intermediate in its characters between *C. Guimarasensis* and *Philippinarum*, and serving to connect the three species in one. In *C. Philippinarum* a sutural depression indicates the faint channel of *C. zebra*, which in *C. Guimarasensis* assumes the form of an incised groove, and the canal narrows according as the whorls are more conically coiled.

2010-2011
2010-2011
2010-2011



66^a



66^b



66^c



67^a



67^b



68^a



68^b



69^a



69^b



70

CYCLOPHORUS.

PLATE XV.

Species 66. (Fig. a, b, c, Mus. Cuming.)

CYCLOPHORUS ANNULATUS. *Cycl. testā perampliter patentissimè umbilicatā, depressissimā, subdiscoidē, olivaceā, plerumque castaneo radiatim maculatā; anfractibus angustis, transversim densè ruguloso-striatis, juxta suturas canaliculato-depressis, deinde rotundatis; aperturā parvā, fere circulari, labro subcalloso, parum reflexo.*

THE RINGED CYCLOPHORUS. Shell very largely and very openly umbilicated, very depressed, rather discoid, olive, generally radiately blotched with chestnut; whorls narrow, transversely densely wrinkle-striated, canaliculately depressed next the sutures, then rounded; aperture small, almost circular, lip rather callous, but little reflected.

Cyclostoma annulatum, Troschel, MS. in Mus. Berol., fide Pfeiffer, Zeitschr. für Malak. 1847. p. 150.

Cyclophorus annulatus, Pfeiffer.

Cyclophorus deplanatus, Pfeiffer.

Cyclophorus loxostoma, Pfeiffer.

Cyclophorus Thwaitesii, Pfeiffer.

Cyclophorus Parapsis, Benson.

Hab. Ceylon; India.

The name given to this species by Troschel is suggested by the numerous transverse raised striae, which have the appearance of fine close-set rings. I quote Dr. Pfeiffer's *C. deplanatus* as a synonym on the authority of a specimen so labelled (probably by Pfeiffer himself) in Mr. Cuming's collection, and which is represented at Fig. 66 a; and I believe that *C. loxostoma*, *Thwaitesii*, and *Parapsis* are also referable to *C. annulatus*.

Species 67. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS TEXTURATUS. *Cycl. testā perampliter perspectivè umbilicatā, depressā, olivaceā, immaculatā; anfractibus rotundatis, striis elevatis rugiformibus undique irregulariter crispato-reticulatis; aperturā circulari, fauce cærulescente, labro simplici.*

THE WOVEN CYCLOPHORUS. Shell very largely perspectively umbilicated, depressed, olive, unspotted; whorls rounded, everywhere irregularly crispately reticulated with raised wrinkle-like striae; aperture circular, interior bluish, lip simple.

Cyclostoma texturatum, Sowerby, Thes. Conch. Supp. p. 160*. pl. 31 a.

Cyclophorus texturatus, Pfeiffer.

Hab. Guatemala.

An interesting New World type of *Cyclophorus*, in which the surface is sculptured throughout with an irregular network of waved decussately wrinkled striae.

Species 68. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS BAIRDI. *Cycl. testā perampliter patentissimè umbilicatā, depressissimā, subdiscoidē, fulvā, castaneo confertim acutè fulguratā, ad peripheriam saturatè fasciatā; anfractibus angustis, spiraliter densè granoso-striatis, supra planulatis, deinde rotundatis; aperturā parvā, circulari, labro subincrassato, haud reflexo.*

BAIRD'S CYCLOPHORUS. Shell very largely and very openly umbilicated, very depressed, somewhat discoid, fulvous, closely sharply lightning-marked with chestnut, dark-banded at the periphery; whorls narrow, spirally densely grain-striated, flattened above, then rounded; aperture small, circular, lip rather thickened, not reflected.

PFEIFFER, Pro. Zool. Soc. 1852, p. 144. pl. 13. f. 1.

Hab. Ceylon.

Of the same openly-convoluted type as the Ceylon *C. annulatus*, but of quite a distinct sculpture. The whorls, instead of being striated transversely, are striated spirally, and the striae are granulated throughout.

Species 69. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS CONFLUENS. *Cycl. testā perampliter patentissimè umbilicatā, depressā, subdiscoidē, fulvo-albidā, castaneo supra tinctā et latè fasciatā, infra remotè lineari-fasciatā; anfractibus angustis, rotundatis, transversim decussatim corrugato-striatis; aperturā circulari, labro simplici.*

THE CONFLUENT CYCLOPHORUS. Shell very largely and very openly umbilicated, depressed, rather discoid, fulvous-white, broadly banded with chestnut above, distantly linearly banded below; whorls narrow, rounded, transversely decussately wrinkle-striated; aperture circular, lip simple.

CYCLOPHORUS.—PLATE XV.

PFEIFFER, Pro. Zool. Soc. 1860, p. 140.

Hab. Borneo.

An interesting new species of the subdiscoidal Ceylon type from Borneo, in which the sculpture consists of transverse obliquely crossing wrinkle-like striae.

Species 70. (Mus. Cuming.)

CYCLOPHORUS PONDEROSUS. *Cycl. testā subampliter perspectivè umbilicatā, conico-depressā, crassā, olivaceā, versus apicem rosaceā; anfractibus declivi-convexis, undique obliquè malleatis et ruguloso-reticulatis, ad peripheriam obtusè carinatis; aperturā obliquè subcirculāri, labro incrassato, haud reflexo.*

THE HEAVY CYCLOPHORUS. Shell rather largely perspectively umbilicated, conically depressed, thick, olive, tinged with rose towards the apex; whorls slopingly convex, obliquely malleated and wrinkle-reticulated throughout, obtusely keeled at the periphery; aperture obliquely subcircular, lip thickened, not reflected.

Cyclostoma ponderosum, Pfeiffer, Pro. Zool. Soc. 1851, p. 243.

Cyclophorus ponderosus, Pfeiffer.

Hab. Guatemala.

Of the same New World type as *C. texturatus* from the same locality, but of a more raised and less openly umbilicated form, with a well-marked specific difference in the reticulated sculpture.



71



72^b



73^a



74^a



74^b



75^b



75^a



76^b



76

CYCLOPHORUS.

PLATE XVI.

Species 71. (Mus. Cuming.)

CYCLOPHORUS ALTERNANS. *Cycl. testā modicè profundè umbilicatā, orbiculari-depressā, tenniculā, sub epidermide pallidè fuscescente deciduā pellucido-abbā, versus apicem pallidè rosaceā; anfractibus angustis, ad suturas linearimpressis, deinde rotundatis, undique spiritaliter acutè multilatis, liris superis lirā minore interveniente: aperturā circulari, labro simplici.*

THE ALTERNATING CYCLOPHORUS. Shell moderately deeply umbilicated, orbicularly depressed, rather thin, transparent white, tinged towards the apex with rose, beneath a deciduous pale-brown epidermis; whorls narrow, linearly impressed at the sutures, then rounded, everywhere spirally sharply many-ridged, upper ridges with a smaller alternate ridge running between them; aperture circular, lip simple. *Cyclostoma alternans*, Pfeiffer, Pro. Zool. Soc. 1851, p. 249.

Cyclophorus alternans, Pfeiffer.

Hab. Madagascar.

A light transparent shell, corded in a marked manner throughout with sharp ridges, between the upper of which there is a fine intervening ridge.

Species 72. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS FORBESIANUS. *Cycl. testā modicè perspectivè umbilicatā, orbiculari-depressā, pellucido-rubellā vel albidā, versus apicem rubellā; anfractibus angustis, liris spiralibus inequalibus densè exsculptis, juxta suturas impressis, deinde rotundatis; aperturā obliquè circulari, labro simplici.*

FORBES' CYCLOPHORUS. Shell moderately perspectively umbilicated, orbicularly depressed, transparent red, or white, reddish towards the apex; whorls narrow, densely sculptured with unequal spiral ridges, impressed next the sutures, then rounded; aperture obliquely circular, lip simple.

PFEIFFER, Pro. Zool. Soc. 1855, p. 104.

Hab. New Hebrides, Macgillivray.

Though bearing a strong general resemblance to the preceding species, *C. Forbesianus* is of a different form, more perspectively umbilicated, while the sculpture is unequal, less regularly defined.

Species 73. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS MEXICANUS. *Cycl. testā subpatentè perspectivè umbilicatā, orbiculari-depressā, carneo-albidā vel aurantio-rubellā; anfractibus subangustis, densè transversim striatis, juxta suturas angustè depresso-planis, deinde rotundatis, ultimo prope aperturam laxè convoluto, producto; aperturā circulari, labro reflexo, juxta umbilicum profundè emarginato, intus rividè aurantio-rufo.*

THE MEXICAN CYCLOPHORUS. Shell rather openly perspectively umbilicated, orbicularly depressed, flesh-white or orange-red; whorls rather narrow, densely transversely striated, narrowly depressly flattened next the sutures, then rounded, last whorl loosely convoluted and produced near the aperture; aperture circular, lip reflected, deeply notched next the umbilicus, bright orange-red within.

Cyclostoma Mexicanum, Menke, Synopsis, p. 133.

Aperostoma Mexicanum, Pfeiffer.

Cyclotus Mexicanus, Gray.

Cyclophorus Mexicanus, Pfeiffer.

Cyrtotoma Mexicanum, Mörch.

Hab. Vera Cruz, Mexico.

In *C. Mexicanus* the last whorl loses its sutural hold on the penultimate whorl on approaching maturity, and a broad notch is formed in the lip, near to the umbilicus, resembling the usual gap caused by divided margins. An interesting law in the economy of the animal is here represented. The margins of an aperture necessarily become divided where there is an intervention of the preceding whorl. In *C. Mexicanus* the aperture is loosed from the preceding whorl, but yet the margins are divided for its reception.

Species 74. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS BOURCIERI. *Cycl. testā ampliter umbilicatā, orbiculari-depressā, ustulato-olivaceā; anfractibus angustis, versus apicem spiraliter tenuè latis, liris gradatim evanidis, anfractu ultimo circa umbilicum transversim corrugato; aperturā obliquè circulari, labro simplici.*

BOURCIER'S CYCLOPHORUS. Shell largely umbilicated, orbicularly depressed, burnt-olive; whorls narrow, spirally finely ridged towards the apex, ridges gra-

dually fading, last whorl transversely wrinkled around the umbilicus; aperture obliquely circular, lip simple.

Cyclostoma Bourcier, Pfeiffer, Pro. Zool. Soc. 1852, p. 151.

Cyclophorus Bourcier, Pfeiffer.

Hab. Vicinity of Mindo, Ecuador; Bourcier.

This species, named in honour of M. Bourcier, Consul-General of Quito, by whom it was collected, is distinguished by a very characteristic wrinkling of the lower edge of the whorls, where they form the inner wall of the umbilicus.

Species 75. (Fig. *a, b*, Mus. Cuming.)

CYCLOPHORUS LUTESCENS. *Cycl. testā modicè umbilicatā, orbiculari, depressiusculā, lutescente, sæpè virente tinctā; anfractibus rotundatis, subinflatis, transversim decussatim corrugato-striatis, supernè leviter impressis; aperturā fere circulari, labro simplici, supernè sinuatā.*

THE YELLOWISH CYCLOPHORUS. Shell moderately umbilicated, orbicular, rather depressed, yellowish, often stained with green; whorls rounded, a little inflated, transversely decussately wrinkle-striated, slightly impressed round the upper part; aperture nearly circular, lip simple, sinuated at the upper part.

Cyclostoma lutescens, Pfeiffer, Pro. Zool. Soc. 1851, p. 250.

Cyclophorus lutescens, Pfeiffer.

Hab. Brazil.

The colour of this species partakes more generally of a greenish than a yellowish hue. The whorls are rather more inflated and consequently more globosely coiled than in *C. Bourcier*, and the surface is finely wrinkle-woven throughout.

Species 76. (Mus. Cuming.)

CYCLOPHORUS TIARA. *Cycl. testā subampliter profundè umbilicatā, depressè turbinatā, pellucido-albā; anfractibus subangustis, declivi-convexis, ad peripheriam obtusè angulatis, supra spiraliter liris, infra levigatis; aperturā circulari, parvisculā, labro simplici.*

THE TURBAN CYCLOPHORUS. Shell rather largely deeply umbilicated, depressly turbinated, transparent white; whorls rather narrow, slopingly convex, obtusely angled at the periphery; spirally ridged above, smooth below.

Cyclostoma tiara, Gould, Expedition Shells, pl. viii. f. 116.

Cyclophorus tiara, Pfeiffer.

Hab. Upolu, Navigators' Islands.

The shell here figured is in a very bad state, and may have been at one time or other invested with a coloured epidermis. Its form and traces of sculpture are, however, too characteristic to be overlooked. The whorls are obtusely angled round their periphery, and above this they are corded with regular spiral ridges, while below they are perfectly smooth.



78 a



78 b



79



80 a



80 b



81



82



83



84

CYCLOPHORUS.

PLATE XVII.

Species 77. (Mus. Cuming.)

CYCLOPHORUS STRIGATUS. *Cycl. testā profundē excavato-umbilicatā, conoideo-semiglobosā, apice obtuso, rosaceā; subimmerso; anfractibus angustis, declivi-converxis, spiritaliter validē liris, ultimo paulo descendente; aperturā parvā, circulari, labro vix reflexo.*

THE RIDGED CYCLOPHORUS. Shell deeply excavately umbilicated, conoidly semiglobose, apex obtuse, pink, rather immersed; whorls narrow, slopingly convex, spirally strongly ridged, last whorl a little descending; aperture small, circular, lip scarcely reflected.

Cyclostoma strigatum, Gould, Pro. Bost. Nat. Hist. Soc. 1847, p. 204.

Cyclophorus strigatus, Pfeiffer.

Hab. Upolu, Navigators' Islands.

A small strongly developed Trochus-like shell, of a roseaceous colour, conspicuously spirally ridged throughout.

Species 78. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS RUFESCENS. *Cycl. testā subampliter perspective umbilicatā, orbiculari-depressā, tenuiculā, vel rufescente vel albidā; anfractibus subangustis, ad suturas impressis, undique validē acutē spiraliter liris et striatis, liris per marginem undatis; aperturā circulari, labro simplici.*

THE REDDISH CYCLOPHORUS. Shell rather largely perspective umbilicated, orbicularly depressed, rather thin, reddish or whitish; whorls rather narrow, impressed at the sutures, everywhere strongly sharply spirally ridged and striated, ridges waved along the edge; aperture circular, lip simple.

Cyclostoma rufescens, Sowerby, Pro. Zool. Soc. 1843, p. 60.

Cyclophorus rufescens, Pfeiffer.

Hab. Island of Martinique, West Indies.

Closely allied to *C. alternans*, of smaller growth, more coarsely sculptured.

Species 79. (Mus. Cuming.)

CYCLOPHORUS GUAYAQUILENSIS. *Cycl. testā subampliter perspective umbilicatā, orbiculari-depressā, tenuiculā, flavescēte, lineis castaneis cinctā; anfractibus angustis, supernē planulatis, spiraliter liris, liris*

gradatim evanidis; aperturā fere circulari, labro simplici, marginibus disjunctis.

THE GUAYAQUIL CYCLOPHORUS. Shell rather largely perspective umbilicated, orbicularly depressed, rather thin, yellowish, encircled with chestnut lines; whorls rather flat at the upper part, spirally ridged, ridges gradually fading; aperture nearly circular, lip simple, margins disjoined.

Cyclostoma Guayaquilense, Sowerby, Thes. Conch. Supp. p. 163*. pl. 316. f. 319.

Cyclophorus Guayaquilensis, Pfeiffer.

Hab. Guayaquil, Ecuador; Lattre.

A delicate greenish-yellow shell, banded with numerous pencils of chestnut, pink at the apex.

Species 80. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS GUTTATUS. *Cycl. testā latē umbilicatā, plano-orbiculari, solidulā, nitente, albidā, rufo-fuscescente undique marmoratā; anfractibus angustis, rotundatis, lavis, juxta suturas planulatis; aperturā circulari, labro lennē laminato.*

THE MOTTLED CYCLOPHORUS. Shell broadly umbilicated, flatly orbicular, rather solid, shining, whitish, mottled throughout with pale red-brown; whorls narrow, rounded, smooth, a little flattened next the sutures; aperture circular, lip thinly laminated.

Cyclostoma guttatum, Pfeiffer, Pro. Zool. Soc. 1851, p. 251.

Cyclophorus guttatus, Pfeiffer.

Hab. —?

A rather solid smooth porcelain-like shell, mottled in a zigzag manner throughout with pale red-brown.

Species 81. (Mus. Cuming.)

CYCLOPHORUS WAHLBERGI. *Cycl. testā subampliter umbilicatā, depresso-conoideā, tenuiculā, virente-corneā; anfractibus ad suturas lineari-impressis, deinde convexis, subinflatis, undique capillaceo-striatis, quasi sericeis; aperturā circulari, labro simplici, supernē paululum sinuatis, marginibus disjunctis.*

WAHLBERG'S CYCLOPHORUS. Shell rather largely umbilicated, depressly conoid, rather thin, greenish, horny; whorls linearly impressed at the sutures, then convex, slightly inflated, everywhere hair-striated, as

though silky; aperture circular, lip simple, a little sinuated at the upper part, with the margins disjointed.

Cyclostoma Wahlbergi, Benson, Ann. and Mag. Nat. Hist. 1852, vol. x. p. 271.

Cyclophorus Wahlbergi, Pfeiffer.

Hab. Natal, South Africa.

Very similar in general appearance to the South American *Cyclotus translucentus*, to which species it was erroneously assigned by Krauss in his 'Mollusca of South Africa.'

Species 82. (Mus. Cuming.)

CYCLOPHORUS STENOSTOMA. *Cycl. testā latè patentè umbilicatā, depressā, subdiscoideā, fulvescente-albā, castaneo-brunneo profusè undato-flammalā; anfractibus angustis, juxta suturas impressis, transversim densè capillaceo-striatis; aperturā obliquè circulari, parcā, labro coarctato.*

THE CONTRACTED-MOUTH CYCLOPHORUS. Shell broadly openly umbilicated, depressed, somewhat discoid, fulvous-white, profusely zigzag-flamed with chestnut-brown; whorls narrow, impressed next the sutures, transversely densely hair-striated; aperture obliquely circular, small, lip pressed inwards.

Cyclostoma stenostoma, Sowerby, Thes. Conch. p. 95. pl. 31. f. 261.

Cyclophorus stenostoma, Pfeiffer.

Hab. Neilgherry Hills, India; Benson.

This species has very much the appearance of a diminutive *C. Bairdi*, but it will be found on examination that

the sculpture in one species is transverse, in the other spiral.

Fig. 83. (Mus. Cuming.)

The shell here figured is the type of Dr. Pfeiffer's *Cyclophorus loxostoma*, collected by Mr. Lear in Ceylon. I find it on examination to be identical with *C. annulatus*, from the same locality, of which it is a small specimen. From the preceding species, *C. stenostoma*, it may be recognized by its more largely open umbilicus and radiately blotched painting.

Species 84. (Mus. Cuming.)

CYCLOPHORUS PSILOMITUS. *Cycl. testā perspective umbilicatā, orbiculari-depressā, virente-luteā vel olivaceā, anfractibus subangustè rotundatis, liris tenuibus undique regulariter spiritaliter funicularis; aperturā circulari, labro simplici.*

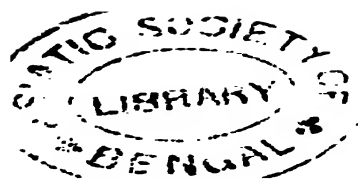
THE FINELY CORDED CYCLOSTOMA. Shell perspective umbilicated, orbicularly depressed, greenish-yellow or olive; whorls rather narrowly rounded, regularly spirally corded throughout with fine ridges; aperture circular, lip simple.

Cyclostoma psilomitum, Pfeiffer, Pro. Zool. Soc. 1851, p. 250.

Cyclophorus psilomitum, Pfeiffer.

Hab. Venezuela.

The sculpture is much more evenly defined in this species than in *C. alternans*, *Forbesianus*, or *rufescens*. The ridges are perfectly equidistant and uniform throughout.





86



86 a



86 b



87 a



88 a



88 b



87 b



89



90

CYCLOPHORUS

PLATE XVIII.

Species 85. (Mus. Cuming.)

CYCLOPHORUS SHIPLAYI. *Cycl. testā subampliter umbilicatā, depressā, albidā, castaneo radiatim maculatā; anfractibus angustis, ad suturas lineari-impressis, transversim membranaceo-striatis; aperturā circulari, labro simplici.*

SHIPLAY'S CYCLOPHORUS. Shell rather largely umbilicated, depressed, whitish, radiately blotched with chestnut; whorls narrow, linearly impressed at the sutures, transversely membrane-striated; aperture circular, lip simple.

PFEIFFER, Pro. Zool. Soc. 1856, p. 337.

Hab. Neilgherry Hills, India; Shiplay.

This little species has very much the appearance of *C. parens*, but it has a more depressed spire and is differently striated.

Species 86. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS FORNICATUS. *Cycl. testā ampliter subcuculo-umbilicatā, convexo-depressā, sublenticulari, albidā, versus apicem rosaceā, epidermide tenui fuscescente indutā; anfractibus angustis, undique spiraliter acutē latis, ad peripheriam conspicuē carinatis, carinā undulatā; aperturā circulari, labro simplici.*

THE VAULTED CYCLOPHORUS. Shell largely rather excavately umbilicated, convexly depressed, somewhat lens-shaped, whitish, pink towards the apex, covered with a thin brownish epidermis; whorls narrow, spirally sharply ridged throughout, conspicuously keeled at the periphery, keel a little waved; aperture circular, lip simple.

PFEIFFER, Pro. Zool. Soc. 1852, p. 146.

Hab. New Hebrides.

Of all *Cyclophori*, this little species, from New Hebrides, is the most prominently keeled at the periphery.

Fig. 87. (Fig. a, b, Mus. Cuming.)

The specimen here figured is the type of Dr. Pfeiffer's *Cyclophorus Thwaitesii*. I cannot bring my mind to believe that it is anything more than a small depressed form of *C. annulatus*, from the same locality.

Species 88. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS AMBOINENSIS. *Cycl. testā modicē umbilicatā, depressē turbinatā, albā, rufo-fusca copiosē lineatā et flammatā; anfractibus laticibus, declivi-convexis; aperturā circulari, labro paululum reflexo.*

THE AMBOYNA CYCLOPHORUS. Shell moderately umbilicated, depressly turbinated, white, copiously stained and flamed with red-brown; whorls smooth, slopingly convex; aperture circular, lip a little reflected.

PFEIFFER, Pro. Zool. Soc. 1852, p. 114.

Hab. Island of Amboyna.

A well-marked brightly-coloured smooth shell, of a neat turban form.

Species 89. (Mus. Cuming.)

CYCLOPHORUS CELOCONUS. *Cycl. testā modicē umbilicatā, depressē turbinatā, tenui, subpellucidā, olivaceo-lutescente, castaneo radiatim strigatā, fusciā conspicuē infra peripheriam; anfractibus convexis, transversim densē capillaceo-striatis; aperturā obliquē circulari, labro simplici.*

THE HOLLOW CONE CYCLOPHORUS. Shell moderately umbilicated, depressly turbinated, thin, semitransparent, olive-yellow, radiately streaked with chestnut, with a conspicuous band below the periphery; whorls convex, transversely densely hair-striated; aperture obliquely circular, lip simple.

Cyclostoma celoconus, Benson, Ann. and Mag. Nat. Hist. 1851, vol. viii. p. 189.

Cyclophorus celoconus, Pfeiffer.

Hab. Neilgherry Hills, India; Jerdon.

A prettily painted light silky shell, distinguished by a conspicuous chestnut band below the periphery.

Species 90. (Mus. Cuming.)

The shell here figured is Mr. Benson's *Cyclophorus Parapsis*, which, together with *C. deplanatus*, *Thwaitesii*, and *loxostoma*, all from Ceylon, are, in my opinion, only trifling modifications of *C. annulatus*, Troschel, from the same locality.

CYCLOPHORUS.—PLATE XVIII.

Species 91. (Mus. Cuming.)

CYCLOPHORUS PHÆNOTOPICUS. *Cycl. testā subpatentē umbilicatā, depressā, subdiscoideā, albidā, rufo-fusco radiatim strigatā, epidermide subpilosā indutā; anfractibus angustis, rotundatis, spiraliter liratis, liris irregularibus, interstitiis striis capillaceis transversis minutè decussatis; aperturā circulari, labro simplici.*

THE DARJILING CYCLOPHORUS. Shell rather openly umbilicated, depressed, nearly discoid, white, radially streaked with red-brown, covered with a some-

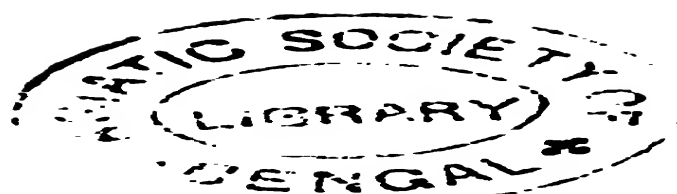
what pilose epidermis; whorls narrow, rounded, spirally ridged, ridges irregular, the interstices minutely decussated with transverse hair striæ; aperture circular, lip simple.

Cyclostoma Phænotopicum, Benson, Ann. and Mag. Nat. Hist. 1851, vol. viii. p. 190.

Cyclophorus Phænotopicus, Pfeiffer.

Hab. Darjiling, Sikkim-Himalaya.

A very distinct and characteristic species.





92



93



95 a



96 a



96 b



97 b



97 a.



97 b



98

CYCLOPHORUS.

PLATE XIX.

Species 92. (Mus. Cuming.)

CYCLOPHORUS CONVEXIUSCULUS. *Cycl. testā ampliter perspectivè umbilicatā, convexo-depressā, fuscescente-corneā, epidermide fuscā confertim membranaceo-plicatā indutā; anfractibus perangustis, declivi-rotundatis, ad peripheriam obtusè carinatis; aperturā circulari, labro simplici.*

THE MODERATELY CONVEX CYCLOPHORUS. Shell largely perspectively umbilicated, convexly depressed, brownish-horny, covered with a brown epidermis, which is closely membrane-plaited; whorls very narrow, slopingly rounded, obtusely keeled at the periphery; aperture circular, lip simple.

PFIEFFER, Pro. Zool. Soc. 1855, p. 104.

Hab. Cape of Good Hope; Macgillivray.

Chiefly distinguished by the peculiar structure of its epidermis, which is developed in close-set membranaceous folds.

Species 93. (Mus. Cuming.)

CYCLOPHORUS CUSPIDATUS. *Cycl. testā subampliter profundè umbilicatā, acuminato-conoideā, fuscescente, spirā peculiariter torto-elevatā; anfractibus angustis, liris tenuibus subdistantibus pilosis spiraliter carinatis, ad peripheriam subacutè angulatis; aperturā circulari, labro simplici, paululum reflexo.*

THE POINTED CYCLOPHORUS. Shell rather largely deeply umbilicated, acuminately conoid, spire peculiarly twistedly raised, brownish; whorls narrow, spirally keeled with fine, rather distant, hairy ridges, rather sharply angled at the periphery; aperture circular, lip simple, a little reflected.

Cyclostoma cuspidatum, Benson, Ann. and Mag. Nat. Hist. 1851, vol. viii. p. 189.

Hab. Neilgherry Hills; Jerdon.

Singularly characterized by the spire being tortuously raised, giving to the shell the form of a little pagoda.

Species 94. (Mus. Cuming.)

CYCLOPHORUS LIGNARIUS. *Cycl. testā perangustè umbilicatā, conoideo-turbinatā, fuscescente, epidermide sericeā obliquè tenuiter membranaceo-plicatā indutā; anfractibus plano-convexis, subtilius planiusculis; aper-*

turā obliquè circulari, parvā, labro paululum reflexo, marginibus disjunctis.

THE WOODEN CYCLOPHORUS. Shell very narrowly umbilicated, conoidly turbinated, brownish, covered with a thin obliquely membrane-plaited epidermis; whorls flatly convex, rather flat beneath; aperture obliquely circular, small, lip a little reflected, margins disjoined.

PFIEFFER, Pro. Zool. Soc. 1857, p. 112.

Hab. New Zealand.

A distinct conically turbinated form, with an unusually small umbilicus.

Species 95. (Fig. c, b. Mus. Cuming.)

CYCLOPHORUS PARVUS. *Cycl. testā subampliter profundè umbilicatā, depresso-turbinatā, apice subacutā, fulvescente-corneā, castaneo radiatim flammatis, flammis subdistantibus; anfractibus angustis, declivi-rotundatis, ad suturas impressis, liris tenuibus hic illic spiraliter cinctis; aperturā circulari, labro simplici.*

THE SMALL CYCLOPHORUS. Shell rather largely deeply umbilicated, depressly turbinated, rather sharp at the apex, fulvous-horny, radiately flamed with chestnut, flames rather distant; whorls narrow, slopingly rounded, impressed at the sutures, encircled here and there with fine ridges; aperture circular, lip simple.

Cyclostoma parvum, Sowerby, Pro. Zool. Soc. 1843, p. 66.

Cyclaphorus parvus, Gray.

Hab. Philippine Islands; Cuming.

Of semitransparent horny substance, conspicuously rayed with chestnut flames, which are unusually straight and distant from each other.

Species 96. (Fig. a, b, Mus. Cuming.)

CYCLOPHORUS TRILIRATUS. *Cycl. testā modicè excavato-umbilicatā, globoso-turbinatā, tenui, corneā, sub epidermide subhispidā castaneo-rafo conspicuè radiatim flammatis; anfractibus declivi-rotundatis, liris tenuibus tribus aut pluribus spiraliter cinctis; aperturā rotundatā, labro fusco, tenuè reflexo.*

THE THREE-RIDGED CYCLOPHORUS. Shell moderately excavately umbilicated, globosely turbinated, thin, horny, conspicuously radiately flamed with chestnut-

red beneath a somewhat hairy epidermis; whorls slopingly rounded, encircled with three or more fine spiral ridges; aperture rounded, lip brown, thinly reflected.

Cyclostoma triliratum, Pfeiffer, Conspect. Cyclost. p. 53.

Cyclophorus trilineatus, Pfeiffer.

Cyclostoma quadriflosum, Benson.

Hab. Boruco.

A light turbinated species, conspicuously rayed throughout with chestnut flames.

Fig. 97. (Fig. *a, b*, Mus. Cuming.)

The specimen here figured represents *Cyclostoma quadriflosum*, described by Mr. Benson in the 'Annals and Magazine of Natural History' for 1852, vol. x. p. 270, but the differences which he assigns to that species in com-

parison with *C. triliratus*, from the same locality, do not appear to me to be tenable.

Species 98. (Mus. Cuming.)

CYCLOPHORUS CEREUS. *Cycl. testâ perangustè umbilicatâ, conoideo-globosâ, virente-cereâ; anfractibus declivi-rotundatis, obliquè capillaceo-striatis; apertura circulari, labro simplici.*

THE WAXEN CYCLOPHORUS. Shell very narrowly umbilicated, conoidly globose, greenish waxen colour; whorls slopingly rounded, obliquely hair-striated; aperture circular, lip simple.

PFEIFFER, Pro. Zool. Soc. 1854, p. 301.

Hab. —?

Little is known of this species. If a true *Cyclophorus*, it is quite distinct from any other yet described.





99



100



101



103 a



103 b



103 b



104 a



104 b



105

CYCLOPHORUS.

PLATE XX.

Species 99. (Mus. Benson.)

CYCLOPHORUS MORICANDI. *Cycl. testā perspectivè umbilicatā, depresso-turbinatā, opaco-albidā, epidermide fuscescente deciduā; anfractibus rotundatis, transversim filoso-striatis, ultimo versus aperturam disjuncto; aperturā circulari, labro simplici.*

MORICAND'S CYCLOPHORUS. Shell perspectively umbilicated, depressly turbinated, opake-white, with a deciduous brownish epidermis; whorls rounded, transversely thread-striated, the last disjoined towards the aperture; aperture circular, lip simple.

PFEIFFER, Gray, Brit. Mus. Cat. Phanerop. p. 71.

Cyclostoma disjunctum, Moricand (not of Morelet).

Cyclopoma disjunction, Troschel.

Cyclophorus disjunctus, Pfeiffer.

Hab. Bahia, Brazil.

A small loosely coiled species, in which the last whorl, before reaching maturity, is quite detached from the penultimate whorl.

Species 100. (Mus. Benson.)

CYCLOPHORUS LIRICINCTUS. *Cycl. testā excavato-umbilicatā, orbiculari-depressā, albidā; anfractibus spiraliter validè liris et sulcatis, juxta suturas concaviusculis; aperturā parvā, circulari, labro simplici.*

THE RIDGE-ENCIRCLED CYCLOPHORUS. Shell excavately umbilicated, orbicularly depressed, whitish; whorls spirally strongly ridged and grooved, rather concave next the sutures; aperture small, circular, lip simple.

Cyclostoma liricinctum, Benson, Ann. and Mag. Nat. Hist. 1853, vol. xi. p. 106.

Cyclophorus liricinctus, Pfeiffer.

Hab. Shores of Swan River, Western Australia; Bacon.

This little Australian species is of a quite distinct type. The spiral ridges are not delicate raised lines like those which characterize the little Borneo *C. triliratus*, but strongly sculptured ridges with the interstices between them flatly grooved.

Species 101. (Mus. Benson.)

CYCLOPHORUS ORBICULATUS. *Cycl. testā excavato-umbilicatā, orbiculari-depressā, albidā; anfractibus ad suturas et circa umbilicum spiraliter liris et sul-*

catis, medio laxibus; aperturā parvā, circulari, labro simplici.

THE ORBICULAR CYCLOPHORUS. Shell excavately umbilicated, orbicularly depressed, whitish; whorls spirally ridged and grooved at the sutures and around the umbilicus, smooth between; aperture small, circular, lip simple.

Cyclostoma orbiculatum, Benson, Ann. and Mag. Nat. Hist. 1853, vol. vi. p. 106.

Cyclophorus orbiculatus, Pfeiffer.

Hab. Shores of Swan River, Western Australia; Bacon.

I doubt if this is anything more than a smooth variety of the preceding species collected at the same time in the same locality; there are obvious traces of the spiral grooves and ridges, and next the suture and around the umbilicus they are more defined. A further supply of specimens is needed to determine the question.

Species 102. (Fig. a, b, Mus. Benson.)

CYCLOPHORUS RAVIDUS. *Cycl. testā ampliter perspectivè umbilicatā, orbiculari-depressā, subdiscoideā, lutescente-olivaceā; anfractibus subangustis, rotundatis, transversim densè capillacro-striatis, striis subcorrugatis; aperturā obliquè circulari, labro simplici.*

THE YELLOWISH CYCLOPHORUS. Shell largely perspectively umbilicated, orbicularly depressed, nearly discoid, yellowish-olive; whorls rather narrow, rounded, transversely densely hair-striated, striae slightly wrinkled; aperture obliquely circular, lip simple.

Cyclostoma ravidum, Benson, Ann. and Mag. Nat. Hist. 1851, vol. viii. p. 190.

Cyclophorus ravidus, Pfeiffer.

Hab. Neilgherry Hills, India; Jerdon.

This is quite distinct from the Ceylon *C. annulatus* and the numerous varieties of it which have been regarded as species. The whorls are not so narrow, and the shell is less openly umbilicated.

Species 103. (Fig. a, b, Mus. Benson.)

CYCLOPHORUS PINNULIFER. *Cycl. testā ampliter patentè umbilicatā, depressā, subdiscoideā, lutescente, maculis castaneis radiatā; anfractibus angustis, subrapidè crescentibus, rotundatis, transversim densè filoso-striatis;*

aperturā circulari, labro paululum reflexo, supernè tenuè sinuato-alato.

THE WINGED CYCLOPHORUS. Shell largely openly umbilicated, depressed, nearly discoid, yellowish, rayed with chestnut blotches; whorls narrow, rather rapidly increasing, rounded, transversely densely thread-striated; aperture circular, lip a little reflected, slightly sinuately winged at the upper part.

BENSON, Ann. and Mag. Nat. Hist. 1857, vol. xix. p. 205.

Hab. Khasiah Hills, India; Theobald.

There is little to distinguish this species from the Ceylon *C. annulatus*, except the slightly winged lamina on the upper edge of the lip, indicating a passage to the *Pterocyclos* group.

Species 104. (Fig. *a, b*, Mus. Benson.)

CYCLOPHORUS CALYX. *Cycl. testā perampliter excavato-umbilicatā, depressā, subdiscoideā, albidā aut lutescente, castaneo radiatim maculatā; anfractibus perangustis, juxta suturas planulatis, deinde rotundatis, subtus obtusè angulatis; aperturā circulari, labro tenuè reflexo, supernè obscurè sinuato-alato.*

THE CALYX CYCLOPHORUS. Shell very largely excavately umbilicated, depressed, nearly discoid, whitish or yellowish, rayed with chestnut blotches; whorls very narrow, a little flattened next the sutures, then rounded, obtusely angled beneath; aperture circular, lip thinly reflected, obscurely sinuately winged at the upper part.

BENSON, Ann. and Mag. Nat. Hist. 1856, vol. xvii. p. 228.

Hab. Akaouktong, India (near the shores of the Irawadi river); Theobald.

Distinguished from the preceding species by the whorls being narrower, and obtusely angled round the umbilicus.

Fig. 105. (Mus. Benson.)

The shell here represented is Mr. Benson's type of *C. scissimargo*, described by him in Ann. and Mag. Nat. Hist. 1856, vol. xvii. p. 228. It is characterized from having a small notch or incision at the junction of the lip with the penultimate whorl. Mr. Sowerby has accidentally, contrary to my directions, turned away the mouth of the shell in the accompanying figure, so that the little notch is not shown. I am not, however, satisfied that this minute marginal notch can be relied on as a specific character. The shell in all other respects is *C. triliratus*, including Mr. Benson's *C. quadristosus*; and on examining several specimens of that species, I find in all more or less indications of the notch. Its presence seems to depend on the accidents of convolution. When the last whorl is coiled so closely as that the body of the penultimate whorl forms a portion of the wall of the aperture, then the minute notch at the junction of the lip is not readily apparent; but when the aperture is more removed from the penultimate whorl, and a layer of callous matter intervenes, then the notch is made conspicuous. The curious feature is that when there is a layer of callous matter, it should stop short of the notch, not filling it up.

CYCLOPHORUS.

	Plate.	Species		Species	
<i>alternans</i> , Pfeiffer	XVI.	71	<i>Forbesianus</i> , Pfeiffer	XVI.	72
<i>altivagus</i> , Benson	XIII.	55	<i>fornicatus</i> , Pfeiffer	XVIII.	86
<i>Amboinensis</i> , Pfeiffer	XVIII.	88	<i>fulguratus</i> , Pfeiffer	IX.	35
<i>amoenus</i> , Pfeiffer	X.	40	<i>Girromieri</i> (Cyclost.), Souleyet	VIII.	33
<i>annulatus</i> (Cyclost.), Troschel.	XV.	66	<i>Guayaquilensis</i> (Cyclost.), Sow.	XVII.	79
<i>Apie</i> (Cyclost.), Recluz	XIV.	58	<i>Guimarasensis</i> (Cyclost.), Sow.	XIV.	63
<i>appendiculatus</i> , Pfeiffer	VIII.	33	<i>guttatus</i> , Pfeiffer	XVII.	80
<i>aquilus</i> (Cyclost.), Sowerby	XI.	45	<i>Helicoides</i> (Cyclost.), Sow.	XIV.	61
<i>atramentarius</i> (Cyclost.), Sow.	XIV.	62	<i>Haughtoni</i> , Theobald	II.	5
<i>aurantiacus</i> (Annularia), Schum.	I.	3	<i>Himalayanus</i> , Pfeiffer	IV.	11
<i>Aurora</i> , Benson	IX.	36	<i>hyatensis</i> , Pfeiffer	XIX.	48
<i>Bairdi</i> , Pfeiffer	XV.	68	<i>Indicma</i> (Cyclost.), Philippi	II.	8
<i>Bensoni</i> , Pfeiffer	IX.	38	<i>Indicus</i> (Cyclost.), Deshayes	IV.	15
<i>Borneensis</i> (Cyclost.), Metcalfe	XII.	50	<i>involutus</i> (Helix), Müller	I.	1
<i>Boucardi</i> , Sallé	VII.	26	<i>Jerdoni</i> (Cyclost.), Benson	V.	20
<i>Bourcierii</i> , Pfeiffer	XVI.	71	<i>labiosus</i> , Pfeiffer	VIII.	32
<i>calyx</i> , Benson	XX.	101	<i>leucostoma</i> , Pfeiffer	XIII.	56
<i>canaliferus</i> (Cyclost.), Sowerby	VIII.	31	<i>liguarius</i> , Pfeiffer	XIX.	94
<i>Cantori</i> (Cyclost.), Benson	XIII.	54	<i>linguiferus</i> (Cyclost.), Sow.	VI.	23
<i>cereus</i> , Pfeiffer	XIX.	98	<i>lingulatus</i> (Cyclost.), Sowerby	XII.	49
<i>Ceylanicus</i> , Pfeiffer	X.	42	<i>liricinctus</i> (Cyclost.), Benson	XX.	100
<i>Charpentieri</i> (Cyclost.), Mouss.	VIII.	33	<i>litans</i> (Turbo), Gmelin	VI.	24
<i>cheloconus</i> (Cyclost.), Benson	XVIII.	89	<i>loxostoma</i> , Pfeiffer	XVII.	83
<i>confluens</i> , Pfeiffer	XV.	69	<i>luridus</i> , Pfeiffer	XI.	47
<i>convexusculus</i> , Pfeiffer	XIX.	92	<i>lutescens</i> , Pfeiffer	XVI.	75
<i>crassus</i> (Cyclost.), Pfeiffer	XI.	43	<i>Luzonicus</i> (Cyclost.), Sow.	VIII.	33
<i>cryptomphalus</i> , Benson	IX.	37	<i>maculosus</i> (Cyclost.), Sow.	V.	17
<i>cucullatus</i> , Gould	XI.	44	<i>Malayanus</i> , Benson	I.	2
<i>Cumingii</i> (Cyclost.), Sowerby	VII.	27	<i>margarita</i> , Pfeiffer	XIV.	60
<i>cuspidatus</i> (Cyclost.), Benson	XIX.	93	<i>Menckanus</i> (Cyclost.), Phil.	X.	42
<i>denselmentus</i> , Pfeiffer	VIII.	34	<i>Mexicanus</i> (Cyclost.), Menke	XVI.	73
<i>deplanatus</i> , Pfeiffer	XV.	65	<i>Moricandi</i> , Pfeiffer	XX.	99
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MONOGRAPH
OF THE GENUS
LEPTOPOMA.

“ Quel que soit le principe de la vie animale, il ne faut qu'ouvrir le
yeux pour voir qu'elle est le chef-d'œuvre de la Toute puissance.”

Berkeley.



5a



5b



4b



6b



LEPTOPOMA.

PLATE I.

Genus LEPTOPOMA, Pfeiffer.

Testa globoso-turbinata vel conica, tenuè calcarea, interdum membranacea, angustè, sæpè minutè, umbilicata, anfractibus sæpissimè spirali-ter filosa-liratis; apertura circulari, labro plerumque plano-expanso, juxta umbilicum interdum auriculato. Operculum membranaceum, arcispiram, planum.

Shell globosely turbinated or conical, thinly calcareous, sometimes membranaceous, narrowly often minutely umbilicated, whorls mostly spirally thread-ridged; aperture circular, lip generally flatly expanded, sometimes auriculated next the umbilicus. Operculum membranaceous, close-spired, flat.

Under the title *Leptopoma*, Dr. Pfeiffer includes an interesting neatly-defined group of the great family *Cyclostomacea*, enumerating about fifty species. They have mostly thinly calcareous semitransparent shells, some opally diaphanous, encircled with characteristic regularity by fine rather distant thread-like ridges. One species, *L. lasique*, is perfectly membranaceous. The ridge marking the periphery of the whorls is mostly developed into a keel; there are, however, a few species without ridges or keel; and one, *L. vitreum*, has been raised to the rank of a genus of itself, *Dermatocera*, Adams. The aperture of the shell is circular, and the lip, except in a few abnormal species, is more or less flatly expanded. The operculum is entirely membranaceous, closely spired, and flat.

As in the case of many other genera of this family, the geographical distribution of *Leptopoma* is comparatively local. The species are chiefly natives of the islands of the Eastern Archipelago, one or two ranging as far as the islands of West Polynesia. One or two small species are found in India and Ceylon.

Species 1. (Mus. Cuning.)

LEPTOPOMA GONIOSTOMA. *Lept. testâ perangustè umbilicatâ, conoidè, tenui, pellucido-albâ, castaneo oblique strigatâ; anfractibus declivi-concavis, filis opaco-albis distantibus cingulatis, anfractu ultimo ad basin acutè angulato; apertura diagonali, subtrigono-ovati, labro subexpanso-reflexo.*

THE ANGLE-MOUTH LEPTOPOMA. Shell very narrowly umbilicated, conoid, thin, transparent white, obliquely streaked with chestnut; whorls slopingly convex,

encircled with distant opaque-white threads, last whorl sharply angled at the base; aperture diagonal, triangularly ovate, lip rather expandedly reflected.

Cyclostoma goniostoma, Sowerby, Pro. Zool. Soc. 1843, p. 64.

Leptopoma goniostoma, Pfeiffer.

Hab. Cagayan, Province of Misamis, Island of Mindanao, Philippines; Cuning.

A delicate brown-streaked pellucid shell, encircled with distant opaque-white threads, flat at the angle forming a keel.

Species 2. (Mus. Cuning.)

LEPTOPOMA ACUMINATUM. *Lept. testâ minutè umbilicatâ, acuminato-conicâ, diaphano-albâ, immaculatâ, spirâ exertâ; anfractibus declivi-concavis, laceribus, oblique subtilissimè striatis, anfractu ultimo subangulato, ad angulum filoso-carinato; apertura diagonali, ovata, labro expanso-reflexo.*

THE ACUMINATED LEPTOPOMA. Shell minutely umbilicated, acuminate conical, diaphanous white, unspotted, spire exerted; whorls slopingly convex, smooth, obliquely very finely striated, last whorl slightly angled, thread-keeled at the angle; aperture diagonal, ovate, lip expandedly reflected.

Cyclostoma acuminatum, Sowerby, Pro. Zool. Soc. 1843, p. 65.

Leptopoma acuminatum, Pfeiffer.

Hab. St. Juan, Island of Luzon, Philippines; Cuning.

A semitransparent opal-white shell, with the spire acuminately exerted.

Species 3. (Mus. Cuning.)

LEPTOPOMA ELATUM. *Lept. testâ perangustè umbilicatâ, subacuminato-conicâ, albâ, fuscescente confectum undato-strigatâ; anfractibus declivi-concavis, laceribus, ultimo subangulato, ad angulum subobtusè filoso-carinato, albâ; apertura subcirculari, tenuè reflexo.*

THE RAISED LEPTOPOMA. Shell very narrowly umbilicated, somewhat acuminate conical, whitish, closely faintly wave-streaked with brown; whorls slopingly convex, smooth, last whorl slightly angled, rather obtusely thread-keeled and whitish at the angle; aperture nearly circular, thinly reflected.

Cyclostoma elatum, Pfeiffer, Pro. Zool. Soc. 1852, p. 159.

Leptopoma elatum, Pfeiffer.

Hab. Ceylon.

Dr. Pfeiffer has overlooked the faint closely-waved painting of this species, which in his type is almost abraded.

Species 4. (Fig. *a, b*, Mus. Cuming.)

LEPTOPOMA ACETIMARGINATUM. *Lept. testâ modicè umbilicatâ, depresso-turbinatâ, tenuicatâ, olivaceo-fusco et albo marmoratâ et teniatâ; anfractibus juxta suturas planulatis, deinde convexis, spiralliter obscure filosis, anfractu ultimo ad peripheriam acutè carinato; aperturâ subcirculari, fere circulari, labro expanso-reflexo.*

THE SHARP-EDGED LEPTOPOMA. Shell moderately umbilicated, depressly turbinated, rather thin, marbled and filleted with olive-brown and white; whorls rather flattened next the sutures, then convex, spirally obscurely threaded, last whorl sharply keeled at the periphery; aperture rather large, nearly circular, lip expandedly reflected.

Cyclostoma acutimarginatum, Sowerby, Pro. Zool. Soc. 1842, p. 80.

Leptopoma acutimarginatum, Pfeiffer.

Hab. Catbalouga, Isle of Samar, Philippines; Cuming.

This very elegant species is well characterized by its central, neatly filleted, sharp-edged keel passing into the suture.

Species 5. (Fig. *a, b*, Mus. Cuming.)

LEPTOPOMA FIRULA. *Lept. testâ perangustè umbilicatâ, Trochiformi, albidâ, olivaceo-fusca obliquè reticulato-fulguratâ; anfractibus convexo-declivibus, corrugato-malleatis, ultimo obtusè angulato, ad basin filoso-lirato; aperturâ diagonali-ovata, labro tenuè expanso.*

THE BUTTON LEPTOPOMA. Shell very narrowly umbilicated, Trochus-shaped, whitish, obliquely reticulately streaked with olive-brown; whorls convexly sloping, corrugately malleated, last whorl obtusely angled, thread-ridged at the base; aperture diagonally ovate, lip thinly expanded.

Cyclostoma fibula, Sowerby, Pro. Zool. Soc. 1843, p. 62.

Leptopoma fibula, Pfeiffer.

Hab. Island of Luzon, Philippines; Cuming.

This species, it will be observed, is not keeled, the periphery of the last whorl having a rounded diagonally inclined form.

Species 6. (Fig. *a, b*, Mus. Cuming.)

LEPTOPOMA ATRICAPILLUM. *Lept. testâ perangustè umbilicatâ, subpyramidal-turbinatâ, albidâ, castaneo undique rîvidè obliquè strigatâ, apice nigro; anfractibus juxta suturas planulo-declivibus, deinde rotundatis, spiralliter nitidè filoso-liratis; aperturâ subcirculari, labro expanso-reflexo.*

THE BLACK-TIPPED LEPTOPOMA. Shell very narrowly umbilicated, somewhat pyramidally turbinated, whitish, vividly obliquely streaked throughout with chestnut, apex black; whorls flatly sloping next the sutures, then rounded, spirally neatly thread-ridged; aperture nearly circular, lip expandedly reflected.

Cyclostoma atricapillum, Sowerby, Pro. Zool. Soc. 1843, p. 64.

Leptopoma atricapillum, Pfeiffer.

Hab. Calapan, Island of Mindoro, Philippines; Cuming.

Of a characteristic subpyramidal form, closely streaked throughout with bright transparent chestnut, especially at the base.

Species 7. (Mus. Benson.)

LEPTOPOMA CYBEUS. *Lept. testâ angustè umbilicatâ, depresso-turbinatâ, albidâ, castaneo teniatâ et sparsim undato-strigatâ; anfractibus spiralliter filoso-liratis, declivi-concavis, ultimo ad peripheriam acutè carinato; aperturâ subcirculari, labro expanso-reflexo.*

THE SHIP LEPTOPOMA. Shell narrowly umbilicated, depressly turbinated, whitish, filleted and sparsely wave-streaked with chestnut; whorls spirally thread-ridged, slopingly convex, last whorl sharply keeled at the periphery; aperture nearly circular, lip expandedly reflected.

BENSON, Ann. and Mag. Nat. Hist. 1857, vol. 19, p. 205.

Hab. Naulai, Khasia Hills, India; Theobald.

This very interesting Indian species partakes of the form of the large Philippine *L. acutimarginatum*.



11d



11b



12a



12b



13

humidiusculis, flosso-striatis; aperturâ subcirculari, labro latè plano-expanso.

THE BROAD-LIPPED LEPTOPOMA. Shell narrowly rather excavately umbilicated, globosely conical, whitish, subdiaphanous, variegated with pale-fulvous spots, and beneath the periphery with two bands; whorls rounded, rather swollen, thread-striated; aperture nearly circular, lip broadly flatly expanded.

Cyclotoma latelimbatum. Pfeiffer, Pro. Zool. Soc. 1851. p. 244.

Leptopoma latelimbatum, Pfeiffer.

Hab. Philippine Islands; Cuming.

On examining this species with the lens it will be seen that the pale fulvous bands are crowded with sharply defined zigzag lines.

Species 13. (Mus. Cuming.)

LEPTOPOMA BICOLOR. *Lept. testâ angustè umbilicatâ, globoso-turbinatâ, nitidè albâ, diaphanâ, castaneo plus minus copiosè fusciatâ; anfractibus rotundatis, sub lente minutissimè crispato-striatis; aperturâ circulari, labro latè plano-expanso.*

THE TWO-COLOURED LEPTOPOMA. Shell narrowly umbilicated, globosely turbinated, shining-white, diaphanous, more or less copiously banded with chestnut; whorls rounded, beneath the lens very minutely crisply striated, aperture circular, lip broadly flatly expanded.

Cyclotoma bicolor, Pfeiffer, Pro. Zool. Soc. 1852. p. 115

Leptopoma bicolor, Pfeiffer.

Hab. —?

A smooth shining species of diaphanous-white substance, more or less copiously banded with chestnut.

LEPTOPOMA.

PLATE II.

Species 8. (Mus. Cuning.)

LEPTOPOMA IGNESCENS. *Lept. testā minutè umbilicatā, globoso-conicā, rufescente-aurantiā, castaneo-nigro conspicuè unifasciatā; anfractibus rotundatis, spirāliter confertim elevato-striatis; aperturā circulari, labro conspicuè expanso.*

THE FIERY LEPTOPOMA. Shell minutely umbilicated, globosely conical, reddish-orange, encircled with a conspicuous chestnut-black band; whorls rounded, spirally closely elevatedly striated; aperture circular, lip conspicuously expanded.

Cyclostoma ignescens, Pfeiffer, Pro. Zool. Soc. 1851. p. 251.

Leptopoma ignescens, Pfeiffer.

Hab. New Ireland.

Of a warm reddish-orange colour, encircled round the periphery of the last whorl with an unusually sharply defined chestnut-black band.

Species 9. (Mus. Cuning.)

LEPTOPOMA SEHELLARUM. *Lept. testā modicè umbilicatā, globoso-conicā, fusciscento-albā, rufo-fusco obscure strigatā; anfractibus rotundatis, spirāliter filoso-liratis et bicarinalis; aperturā parvisculā, rotundatā, labro simplici, subexpanso.*

THE SEHELLE LEPTOPOMA. Shell moderately umbilicated, globosely conical, brownish-white, obscurely streaked with red-brown; whorls rounded, spirally thread-ridged and two-keeled, aperture rather small, rounded, lip simple, a little expanded.

Cyclostoma Sehellarum, Pfeiffer, Pro. Zool. Soc. 1854. p. 302.

Leptopoma ? Sehellarum, Pfeiffer.

Hab. Sehelles Islands.

This is not a very satisfactory species, and even the genus is doubtful, the specimens being in bad condition.

Species 10. (Mus. Cuning.)

LEPTOPOMA MASSENÆ. *Lept. testā angustè umbilicatā, globoso-conicā, pellucido-fuscescente, opaco-albo spirāliter filosā; anfractibus declivi-rotundatis, spirāliter*

linearis-striatis et carinalis; aperturā subcirculari, labro latè expanso.

MASSENÆ'S LEPTOPOMA. Shell narrowly umbilicated, globosely conical, transparent-brown, spirally threaded with opake-white; whorls slopingly rounded, spirally linearly striated and keeled; aperture nearly circular, lip broadly expanded.

Cyclostoma Massenæ, Lesson, Voy. de la Coquille, p. 346. pl. 13. f. 7.

Cyclostoma multilabre, Quoy and Gaimard.

Leptopoma Massenæ, Lesson.

Hab. New Guinea; Lesson, Quoy.

A transparent-brown shell, delicately encircled with opake-white threads.

Species 11. (Fig. a, b, c, d, Mus. Cuning.)

LEPTOPOMA HELICOIDES. *Lept. testā angustè umbilicatā, Trochiformi, pellucido-albā, rufo-fusco lineatā aut marmoratā; anfractibus declivi-converxis, spirāliter filoso-liratis, ultimo ad peripheriam acutè carinato; basi plano-converso; aperturā lunato-rotundato, labro expanso.*

THE HELICOID LEPTOPOMA. Shell narrowly umbilicated, Trochus-shaped, transparent-white, lined or marbled with red-brown; whorls slopingly convex, spirally thread-ridged, last whorl sharply keeled at the periphery, flatly convex at the base; aperture lunar-shaped, lip expanded.

Cyclostoma helioides, Grateloup, Act. Soc. Linn. de Bordeaux, vol. ii. p. 442. pl. 3. f. 14.

Cyclostoma Stainforthii, Sowerby.

Leptopoma helioides, Pfeiffer.

Hab. Philippine Islands; Cuning.

A very characteristic species, collected by Mr. Cuning at several of the Philippine Islands, in different varieties.

Species 12. (Fig. a, b, Mus. Cuning.)

LEPTOPOMA LATELIMBATUM. *Lept. testā angustè subexcavato-umbilicatā, globoso-conicā, albidā, subdiaphanā, maculis et infra peripheriam fuscis duabus pallidè fulvis variegatā; anfractibus rotundatis,*

•



14b



14a



14c



15a



16b



15b



17a



17b



17c

LEPTOPOMA

PLATE III.

Species 14. (Fig. *a, b, c*, Mus. Cuming.)

LEPTOPOMA REGULARE. *Lept. testā modicè subexcavato-umbilicatā, globoso-conicā, pellucido-albā, castaneo-fusco plus minus undato-strigatā, anfractibus decliv-rotundatis, usque ad peripheriam prominente filoso-liratis; aperturā subcirculari, labro expanso-reflexo.*

THE REGULAR LEPTOPOMA. Shell moderately rather excavately umbilicated, globosely conical, transparent-white, more or less wave-streaked with chestnut-brown, whorls slopingly rounded, prominently thread-ribbed as far as the periphery; aperture nearly circular, lip expandedly reflected.

Cyclostoma regulare, Pfeiffer, Pro. Zool. Soc. 1851, p. 244.

Leptopoma regulare, Pfeiffer.

Hab. Philippine Islands.

The thread-like ridges with which the whorls of this species are encircled between the periphery and the suture are rather strongly developed.

Species 15. (Fig. *a, b*, Mus. Cuming.)

LEPTOPOMA VITREUM. *Lept. testā angustè subexcavato-umbilicatā, pellucido-albā, rufo-castaneo variè reticulato-flammata, anfractibus rotundatis, levibus, sub lente densè minutè striatis; aperturā rotundatā, labro latè plano-expanso.*

THE GLASSY LEPTOPOMA. Shell narrowly rather excavately umbilicated, transparent-white, variously reticulately flamed with reddish chestnut, whorls rounded, smooth, beneath the lens densely minutely striated; aperture rounded, lip broadly flatly expanded.

Cyclostoma vitreum, Lesson, Voy. de la Coquille, p. 346. pl. 13. f. 6.

Cyclostoma luteum, Quoy and Gaimard.

Cyclostoma nitidum, Sowerby.

Leptopoma vitreum, Pfeiffer.

Dermatocera vitreum, Adams.

Hab. New Guinea, New Ireland, New Caledonia, Philippine Islands, Java, Neilgherry Hills, India.

A smooth, often richly-painted species, without ridges or keels, widely distributed throughout the East.

Species 16. (Fig. *a, b*, Mus. Cuming.)

LEPTOPOMA PERPLEXUM. *Lept. testā modicè excavato-umbilicatā, depresso-turbinatā, pellucido-albā, fasciā pallidè fulvā supra et infra peripheriam, anfractibus tumido-rotundatis, subobsoletè filoso-liratis, ad peripheriam plerumque carinatis; aperturā circulari, labro latè plano-expanso.*

THE PERPLEXING LEPTOPOMA. Shell moderately excavately umbilicated, depressly turbinated, transparent-white, encircled above and below the periphery with a pale fulvous band, whorls tumidly rounded, rather obsoletely thread-ridged, keeled at the periphery; aperture circular, lip broadly flatly expanded.

Cyclostoma perplexum, Sowerby, Pro. Zool. Soc. 1843, p. 63.

Leptopoma perplexum, Pfeiffer.

Hab. Island of Luzon, Philippines; Cuming.

Distinguished by a depressed convolution and a peculiarly tumid form.

Species 17. (Fig. *a, b*, Mus. Cuming.)

LEPTOPOMA LAEVE. *Lept. testā subangustè excavato-umbilicatā, globoso-conicā, pellucido-albā, castaneo fasciatā vel flammata, anfractibus rotundatis, levibus, sub lente minutè striatis, ad peripheriam subobscure carinatis; aperturā circulari, labro expanso-reflexo.*

THE SMOOTH LEPTOPOMA. Shell rather narrowly excavately umbilicated, globosely conical, transparent-white, banded or flamed with chestnut, whorls rounded, smooth, beneath the lens minutely striated, rather obscurely keeled at the periphery; aperture circular, lip expandedly reflected.

Turbo laevis, Wood, Ind. Test. Supp. pl. 6. f. 5.

Cyclostoma laeve, Gray.

Turbo immaculatus? Chemnitz.

Turbo marginellus? Gmelin.

Cyclostoma maculosum, Souleyet.

Leptopoma immaculatum, Pfeiffer.

Hab. Philippine Islands; Cuming.

It is quite impossible to determine what species of *Leptopoma* is referable to Chemnitz's *Turbo immaculatus* or Gmelin's *T. marginellus*, and even if it were, the names would be hardly admissible.



19



20



21a



22a



22b



21b



23a



23b



24

LEPTOPOMA.

PLATE IV.

Species 18. (Mus. Cuming.)

LEPTOPOMA ASPIRANS. *Lept. testâ minute profundè umbilicatâ, globoso-conicâ, subacuminatâ, albidâ, fuscescente subobscure fasciatâ, anfractibus declivi-converxis, spiraliter exilissimè filoso-liratis; aperturâ circulari, labro expanso-reflexo.*

THE ASPIRING LEPTOPOMA. Shell minutely deeply umbilicated, globosely conical, rather acuminated, whitish, rather obscurely banded with brown, whorls slopingly convex, spirally very finely thread-ridged; aperture circular, lip expandedly reflected.

BENSON, Ann. and Mag. Nat. Hist. 1856, vol. xvii. p. 229.
Hab. Tenasserim Valley, India; Theobald.

This species appears scarcely to differ from the smaller and more acuminated form of *L. vitreum*, which is also found in India.

Species 19. (Mus. Cuming.)

LEPTOPOMA MENADENSE. *Lept. testâ angustè subexcavato-umbilicatâ, globoso-conicâ, subacuminatâ, pellucido-albâ, anfractibus usque ad peripheriam declivi-converxis, filoso-liratis, liris subprominentibus, distantibus, opacis; aperturâ circulari, labro latè plano-expanso.*

THE MENADO LEPTOPOMA. Shell narrowly rather excavately umbilicated, globosely conical, somewhat acuminated, transparent-white, whorls slopingly convex and thread-ridged as far as the periphery, ridges rather prominent, distant, opaque; aperture circular, lip broadly flatly expanded.

PFEIFFER, MS. in Mus. Cuming.

Hab. Island of Menado, Indian Archipelago; Wallace.

An extremely delicate transparent-white shell, encircled above the periphery with rather prominent distant thread-like ridges.

Species 20. (Mus. Cuming.)

LEPTOPOMA DECIPIENS. *Lept. testâ subangustè umbilicatâ, globoso-conicâ, livido-fuscescente, anfractibus declivi-converxis, undique spiraliter filoso-liratis, liris subtilibus subdistantibus; aperturâ circulari, labro expanso-reflexo.*

THE DECEPTIVE LEPTOPOMA. Shell rather narrowly umbilicated, globosely conical, livid brown, whorls

slopingly convex, spirally thread-ridged throughout, ridges fine, rather distant; aperture circular, lip expandedly reflected.

PFEIFFER, MS. in Mus. Cuming.

Hab. Island of Batchian, Eastern Archipelago; Wallace.

Mr. Cuming possesses specimens of this species lately received from Mr. Wallace, some of a smooth livid hue, others of a browner colour, covered with a fine silky fibrous epidermis.

Species 21. (Mus. Cuming.)

LEPTOPOMA UNDATUM. *Lept. testâ perangustè excavato-umbilicatâ, acutè depressè pyramidal-conicâ, ad basin acutissimè angulatâ, pellucido-albâ, opaco-undatâ, anfractibus convexo-declivibus, reversè apicem confertim tenuè filoso-liratis; aperturâ circulari, labro latè plano-expanso.*

THE WAVED LEPTOPOMA. Shell very narrowly excavately umbilicated, sharply depressly pyramidally conical, very sharply angled at the base, transparent-white, opaque-waved, whorls concavely sloping, closely finely thread-ridged towards the apex; aperture circular, lip broadly flatly expanded.

Cyclostoma undatum, Metcalf, Proc. Zool. Soc. 1851, p. 71.

Leptopoma undatum, Pfeiffer.

Hab. Borneo.

A shell of solid growth, peculiarly characterized by its depressly pyramidal form and sharply angled produced periphery.

Species 22. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA PILEUS. *Lept. testâ perangustè umbilicatâ, pyramidal-conicâ, sordidè albâ, fulvo-fusca pallidè umbellatâ, ad suturam punctatâ, punctis distantibus, anfractibus plano-declivibus, parvis converxis, ad basin angulatis, ad angulum filoso-varianis, curvis opaco-albâ, in suturam currente; aperturâ trigono-oratâ, labro expanso-reflexo.*

THE CAP LEPTOPOMA. Shell very narrowly umbilicated, pyramidally conical, dull-white, faintly clouded with fulvous-brown, with distant spots at the suture, whorls flatly sloping, but little convex, angled at the base, thread-keeled at the angle, keel opaque-white,

running into the suture; aperture triangularly ovate, lip expandedly reflected.

Cyclastoma pileus, Sowerby, Pro. Zool. Soc. 1843, p. 31.

Leptopoma pileus, Pfeiffer.

Hab. Island of Luzon, Philippines; Cuming.

A rather dull-looking species, of an obtusely pyramidal conical form, encircled at the basal angle with a characteristic opaque-white thread-like keel, which passes upwards into the suture.

Species 23. (Fig. *a, b*, Mus. Cuming.)

LEPTOPOMA CINCTELLUM. *Lept. testâ angustè umbilicatâ, globoso-turbinatâ, tenui, pellucido-albâ, castaneo nitidè spiratiler lineatâ et latifasciatâ, aut undato-marmoratâ, anfractibus rotundatis, spiratiler filoso-liratis, liris subdistantibus, interstitiis sub lente minutè striatis; aperturâ circulari, labro latè expanso.*

THE FINELY-GIRT LEPTOPOMA. Shell narrowly umbilicated, globose-turbinated, thin, transparent-white, neatly spirally lined and broadly banded or wave-mottled with chestnut, whorls rounded, spirally thread-ridged, ridges rather distant, interstices, beneath the lens, minutely striated; aperture circular, lip broadly expanded.

PFEIFFER, MS. in Mus. Cuming.

Hab. Island of Ternate, Moluccas; Wallace.

A charming species, in which the thread-like ridges are sometimes bright chestnut, on a ground which is transparent-white in the interstices between the bands.

Species 24. (Mus. Cuming.)

LEPTOPOMA GLOBULOSUM. *Lept. testâ angustè umbilicatâ, globosâ, tenui, pellucido-albâ, castaneo undato-marmoratâ vel flammâtâ, flammis interdum grandibus distantibus, spirâ sepe acuminatâ, anfractibus rotundatis, interdum subinflatis, spiratiler exilissimè filoso-liratis; aperturâ circulari, labro expanso.*

THE GLOBOSE LEPTOPOMA. Shell narrowly umbilicated, globose, thin, transparent-white, wave-marbled or flamed with chestnut, flames sometimes large and distant, spire often acuminate, whorls rounded, sometimes rather inflated, spirally very finely thread-ridged; aperture circular, lip expanded.

PFEIFFER, MS. in Mus. Cuming.

Hab. Island of Batchiau, Eastern Archipelago; Wallace.

The specimen figured is the wave-mottled variety, with the spire rather acuminate; the shorter and more inflated form of the species, from which it takes its name, is dashed with large distant flames.



26. a



26. b



28. a



28. b



27. b.



29. c



29. b.



30.

LEPTOPOMA.

PLATE V.

Species 25. (Mus. Cuming.)

LEPTOPOMA MOUHOTI. *Lept. testā subprofundè umbilicatā, globoso-turbinatā, pellucido-albā, fasciā pallidē fulvā infra peripheriam; anfractibus rotundatis, tumidiusculis, undique filo-liratis, liris prominentibus, subdistantibus; aperturā circulari, labro plano-expanso.*

MOUHOT'S LEPTOPOMA. Shell rather deeply umbilicated, globosely turbinated, transparent-white, encircled beneath the periphery with a pale fulvous band; whorls rounded, rather swollen, thread-ridged throughout, ridges prominent, rather distant; aperture circular, lip flatly expanded.

PFEIFFER, MS. in Mus. Cuming.

Hab. Cambogia; Mouhot.

A small delicately transparent tumid species of the prevailing thread-ridged type.

Species 26. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA SERICATUM. *Lept. testā angustè umbilicatā, globoso-conicā, tenui, opaco-albā, fulvā lineatā et infra peripheriam fasciatā; anfractibus declivi-rotundatis, spiritaliter validè liratis, interstitiis obliquè concentricè plicato-striatis; aperturā circulari, labro plano-expanso.*

THE SILKY LEPTOPOMA. Shell narrowly umbilicated, globosely conical, thin, opaque-white, lineated and, beneath the periphery, banded with fulvous; whorls slopingly rounded, spirally strongly ridged, interstices obliquely concentrically plicately striated; aperture circular, lip flatly expanded.

Cyclostoma sericatum, Pfeiffer, Pro. Zool. Soc. 1851, p. 244.

Leptopoma sericatum, Pfeiffer.

Hab. Borneo; Lieut. Taylor.

A pretty semitransparent fulvous species, in which the interstices between the ridges are obliquely plicately striated and covered with a thin opaque-white tissue.

Species 27. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA PELLUCIDUM. *Lept. testā subangustè umbilicatā, globoso-conicā, pellucido-albā, zonulis fulvis*

undato-liratis undique nitidè cingulatā; anfractibus rotundatis, lœvibus, sub lente densè minutè corrugato-striatis; aperturā circulari, labro plano-expanso.

THE TRANSPARENT LEPTOPOMA. Shell rather narrowly umbilicated, globosely conical, transparent white, neatly belted throughout with zones of fulvous waved lines; whorls rounded, smooth, beneath the lens densely minutely wrinkle striated; aperture circular, lip flatly expanded.

Cyclostoma pellucidum, Grateloup, Act. Soc. Linn. de Bordeaux, vol. ii. p. 142, pl. 3. f. 13.

Cyclostoma concinnum, Sowerby.

Leptopoma pellucidum, Pfeiffer.

Hab. Philippine Islands; Cuming.

The fulvous zones which encircle his species will be found, on examining them with the lens, to consist of closely-packed waved lines.

Species 28. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA PULICARIUM. *Lept. testā perangustè umbilicatā, globoso-turbinatā, tenui, subinflatā, punctis fulvis undique lentiginosā; anfractibus convexis, lœvibus, sub lente densè minutè striatis; aperturā circulari, subamplā, labro albido, latè plano-expanso.*

THE LEA-SPOTTED LEPTOPOMA. Shell very narrowly umbilicated, globosely turbinated, thin, rather inflated, freckled throughout with fulvous dots; whorls convex, smooth, beneath the lens closely minutely striated; aperture circular, rather large, lip whitish, broadly flatly expanded.

PFEIFFER, MS. in Mus. Cuming.

Hab. Island of Batchian, Eastern Archipelago; Wallace.

A more inflated species than the last, with the colour not in zones, but uniformly distributed over the surface in dots.

Species 29. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA MELANOSTOMA. *Lept. testā angustè umbilicatā, globoso-turbinatā, pallidè stramineā, lineolis rufescentibus interdum cinctā; anfractibus rotundatis, lœvibus, nitentibus; aperturā circulari, labro latè plano-expanso, conspicuè purpureo-nigro.*

THE BLACK-MOUTH LEPTOPOMA. Shell narrowly umbi-

LEPTOPOMA.—PLATE V.

licated, globosely turbinated, pale straw-colour, sometimes encircled with faint red lines; whorls rounded, smooth, shining; aperture circular, lip broadly flatly expanded, conspicuously purple-black lip.

Cyclostoma melanostoma, Petit, Revue Zool. Soc. Cuv. 1841, p. 308. Mag. de Zool. 1842, pl. 56.

Leptopoma melanostoma, Pfeiffer.

Hab. New Guinea.

This little smooth shining straw-coloured species is distinguished from all other species of the genus by its conspicuous purple-black lip.

Species 30. (Mus. Cuming.)

LEPTOPOMA HANLEYANUM. *Lept. testâ perangustè un-*

bilicatâ, globoso-turbinatâ, fulcâ, flammis angularis fuscis marmoratâ; anfractibus rotundatis, cristis: floro-liratis, interstiliis sub lente minute striatis: aperturâ circulari, labro plano-expanso.

HANLEY'S LEPTOPOMA. Shell very narrowly umbilicated, globosely turbinated, fulvous, marbled with brown angular flames; whorls rounded, very finely thread-ridged, the interstices between them being, beneath the lens, minutely striated; aperture circular, lip flatly expanded.

Cyclostoma Hanleyanum, Pro. Zool. Soc. 1856, p. 384.

Leptopoma Hanleyanum, Pfeiffer.

Hab. Admiralty Islands.

Of extremely delicate texture, copiously mottled with irregular red-brown flames, interspersed with light opaque tissue.



1



31



34 a.



35 a.



35 b.



34 b.



36 a.



36 b.



37

LEPTOPOMA.

PLATE VI.

Species 31. (Mus. Cuming.)

LEPTOPOMA PANAYENSE. *Lept. testâ angustè umbilicatâ, globoso-conicâ, tenuissimâ, cornâ, pallidè fuscâ, castaneo variegatâ; anfractibus declivi-concavis, ad peripheriam angulatis, nullique spirâliter filoso-liratis; aperturâ circulari, labro latè concavo-expanso, subauriculato.*

THE PANAY LEPTOPOMA. Shell narrowly umbilicated, globosely conical, very thin, horny, pale brown, variegated with chestnut; whorls slopingly convex, angled at the periphery, spirally thread-ridged throughout; aperture circular, lip broadly concavely expanded, slightly auriculated.

Cyclotoma Panayense, Sowerby, Pro. Zool. Soc. 1843, p. 62.

Leptopoma Panayense, Pfeiffer.

Hab. Island of Panay, Philippines; Cuming.

A shining brown shell of light horny substance.

Fig. 32. (Mus. Cuming.)

The shell here figured is the *Cyclotoma luteum* of Lesson, adopted originally in Zeitschr. für Malac. as a species, *Leptopoma luteum*, but referred subsequently to *L. citreum* as variety of it.

Species 33. (Mus. Cuming.)

LEPTOPOMA APICATUM. *Lept. testâ minutè umbilicatâ, globoso-conicâ, albidâ, interdum flammulis et fasciâ latâ infra peripheriam ornatâ; anfractibus rotundatis, lævibus, sub lente minutissimè spirâliter striatis; aperturâ circulari, parviusculâ, labro plano-expanso.*

THE POINTED LEPTOPOMA. Shell minutely umbilicated, globosely conical, whitish, sometimes ornamented with small flames and, beneath the periphery, with a broad band; whorls rounded, smooth, beneath the lens very minutely spirally striated; aperture circular, rather small, lip flatly expanded.

Benson, Ann. and Mag. Nat. Hist. 1856, vol. 18, p. 95.

Hab. Ceylon; E. F. Layard.

There is no appearance of thread-ridges in this species, the surface being simply sculptured with exceedingly minute engraved striae.

Species 34. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA INSIGNE. *Lept. testâ angustè subexcavato-umbilicatâ, subconicâ, tenuissimâ, membranaceâ, olivaceo-cornâ; anfractibus convexo-angulatis, spirâliter multiliratis, ad peripheriam carinatis, interstitiis oblique plicato-striatis; aperturâ lunata-rotundatâ, subamplâ, labro tenuè reflexo.*

THE REMARKABLE LEPTOPOMA. Shell narrowly somewhat excavately umbilicated, subconical, very thin, membranaceous, olive horny; whorls convexly inflated, spirally many-ridged, keeled at the periphery, interstices obliquely plicately striated; aperture lunar-rounded, rather large, lip thinly reflected.

Cyclotoma insigne, Sowerby, Pro. Zool. Soc. 1843, p. 62.
Leptopoma insigne, Pfeiffer.

Hab. Calapan, Island of Mindoro, Philippines; Cuming.

A dark olive, light, inflated, horny shell, perfectly membranaceous.

Species 35. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA SEMICLAUSUM. *Lept. testâ minutè umbilicatâ, globoso-turbinatâ, rufo-fuscâ, albo profusè fulguratâ; anfractibus rotundatis, sub lente minutissimè decussatè striatis; aperturâ circulari, labro plano-expanso, albo.*

THE HALF-CLOSED LEPTOPOMA. Shell minutely umbilicated, globosely turbinated, reddish-brown, profusely lightning-marked with white; whorls rounded, beneath the lens very minutely decussately striated; aperture circular, lip flatly expanded, white.

Cyclotoma semiclausum, Pro. Zool. Soc. 1844, p. 302.

Leptopoma semiclausum, Pfeiffer.

Hab. Ceylon; Thwaites.

A strikingly marked keel-less species.

Species 36. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA WALLACEI. *Lept. testâ minutè umbilicatâ, globoso-conicâ, pellucida-albâ, fulco-castaneo renale bifasciatâ; anfractibus rotundatis, spirâliter liratis, liris subdistantibus; aperturâ circulari, labro tenuè expanso.*

WALLACE'S LEPTOPOMA. Shell minutely umbilicated, globosely conical, transparent white, remotely two-

LEPTOPOMA.—PLATE VI.

banded with fulvous chestnut; whorls rounded, spirally ridged, ridges rather distant; aperture circular, lip thinly expanded.

Cyclostoma Wallacei, Pfeiffer, Pro. Zool. Soc. 1857, p. 112.

Leptopoma Wallacei, Pfeiffer.

Hab. Bornéo.

In this beautiful little two-banded species one band is immediately beneath the suture, the other beneath the periphery.

Species 37. (Mus. Cuming.)

LEPTOPOMA LUTEOSTOMA. *Lept. testâ minute umbilicata globoso-turbinatâ, pellucido-stramineâ; anfractibus rotundatis, levibus, nitentibus, sub lente minutissime fi-*

loso-liralis et inciso-striatis; aperturâ circulari, labro plano-expanso luteo-coccineo.

THE YELLOW-MOUTH LEPTOPOMA. Shell minutely umbilicated, globosely turbinated, pellucid straw-colour whorls rounded, smooth, shining, beneath the lens very minutely thread-ridged and engraved-striated, aperture circular, lip flatly expanded, yellowish-scarlet.

Cyclostoma luteostoma, Sowerby, Pro. Zool. Soc. 1843, p. 62.

Leptopoma luteostoma, Pfeiffer.

Hab. Island of Guimaras, Philippines; Cuming.

A smooth polished shell, but showing indications beneath the lens of the typical ridges and striae.



39



40



42b



43a



43b



44

LEPTOPOMA.

PLATE VII.

Species 38. (Mus. Cuming.)

LEPTOPOMA LOWI. *Lept. testâ minutè umbilicatâ, globoso-turbinatâ, fulvo-corneâ, pellucidâ, ad suturas opacâ; anfractibus rotundatis, spirâliter tenuistriatis; aperturâ circulari, subinflatâ, labro eleganter plano-expanso, albo.*

LOW'S LEPTOPOMA. Shell minutely umbilicated, globosely turbinated, fulvous-horny, transparent, opaque white at the sutures; whorls rounded, spirally finely striated; aperture circular, rather inflated, elegantly flatly expanded, white.

PFEIFFER, Mon. Pneum. Supp. p. 70.

Hab. Borneo; Low.

A delicately-transparent, smooth, fulvous, horny shell, overlaid with a very slight deciduous opaque-white tissue next the suture and around the umbilicus.

Species 39. (Mus. Cuming.)

LEPTOPOMA CILIATUM. *Lept. testâ latè excavato-umbilicatâ, depresso-turbinatâ, sordidè castaneâ, fulco-strigatâ et maculatâ; anfractibus convexo-declivibus, concentricè arcuatim plicato-striatis, ad peripheriam angulatis, carinatis, ciliatis; aperturâ parvâ, rotundatâ, parum reflexâ.*

THE CILIATED LEPTOPOMA. Shell broadly excavately umbilicated, depressly turbinated, dark-chestnut, streaked and marbled with fulvous; whorls convexly sloping, concentrically arcuately plicately striated, angled at the periphery, keeled, ciliated; aperture small, rounded, but little reflected.

Cyclostoma ciliatum, Sowerby, Pro. Zool. Soc. 1843. p. 65.

Leptopoma ciliatum, Pfeiffer.

Hab. Island of Luzon, Philippines; Cuming.

This and *L. barbatum* belong to quite a different type, and appear to me to be wrongly placed in this genus. They approximate nearer to a similar form of *Cyclophorus*.

Species 40. (Mus. Cuming.)

LEPTOPOMA SIGNATUM. *Lept. testâ minutè umbilicatâ, globoso-turbinatâ, lutescente-corneâ, strigis confertis rufo-castaneis undique fulguratâ; anfractibus juxta suturas depressiusculis, deinde rotundatis, spirâliter*

exilissimè filoso-liratis; aperturâ circulari, labro callosa-reflexo, livido-albo.

THE REMARKABLE LEPTOPOMA. Shell minutely umbilicated, globosely turbinated, yellowish-horny, waved throughout with close-set reddish chestnut streaks; whorls rather depressed next the suture, then rounded, spirally very finely thread-ridged; aperture circular, lip callously reflected, livid-white.

Cyclostoma signatum, Pfeiffer, Pro. Zool. Soc. 1856. p. 338.

Leptopoma signatum, Pfeiffer.

Hab. Borneo.

The thread-ridges are extremely faintly indicated in this species, but they are certainly present.

Species 41. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA NIGRICANS. *Lept. testâ subangustè umbilicatâ, acuminato-turbinatâ, nigricante-fuscatâ, sericatâ, ad suturas obscurè strigatâ; anfractibus convexis, undique obliquè confertim plicato-striatis, ad peripheriam subobsoletè filoso-carinatis; aperturâ circulari, labro latè callosa-expanso, livido-albo.*

THE DARK LEPTOPOMA. Shell rather narrowly umbilicated, acuminately turbinated, black-brown, silky, obscurely streaked at the sutures; whorls convex, obliquely closely plicately striated throughout, rather obsoletely thread-keeled at the periphery; aperture circular, lip broadly callously expanded, livid-white.

PFEIFFER, MS. in Mus. Cuming.

Hab. — ?

A well-defined species, of which the surface has a dark silky appearance, from being closely set with raised plicated striae.

Species 42. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA BARBATUM. *Lept. testâ latissimè perspectè umbilicatâ, depresso-turbinatâ, fuscâ, castaneo arcuatim tessellatâ; anfractibus angustis, convexis, ad peripheriam carinatis, barbatis, supra spirâliter quingulralis, infra decussatim liratis; aperturâ parvâ, circulari, labro lenè reflexo.*

THE BEARDED LEPTOPOMA. Shell very broadly perspectively umbilicated, depressly turbinated, fulvous,

arcuately tessellated with chestnut; whorls narrow, convex, keeled at the periphery, spirally five-ridged above, decussately ridged below; aperture small, circular, lip thinly reflected.

Cyclostoma barbatum, Pfeiffer, Pro. Zool. Soc. 1855. p. 104.

Leptopoma barbatum, Pfeiffer.

Hab. Sarawak, Borneo.

A very characteristic species, partaking more of the generic character of *Cyclophorus* than of *Leptopoma*.

Species 43. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA CHINENSE. *Lept. testā subampliter umbilicatā, depresso-turbinatā, fulvo-fusca, obscure marmoratā, infra peripheriam castaneo-fusciatā; anfractibus angustis, rotundatis, levibus, ad suturas impressis; aperturā circulari, labro tenuē reflexo.*

THE CHINA LEPTOPOMA. Shell rather largely umbilicated, depressly turbinated, fulvous-brown, obscurely marbled, banded with chestnut beneath the periphery; whorls narrow, rounded, smooth, impressed at the sutures; aperture circular. lip thinly reflected.

Cyclostoma Chinense, Pfeiffer, Pro. Zool. Soc. 1854. p. 299.

Cyclotus? Chinensis, Pfeiffer.

Hab. Hongkong, China; Fortune.

This little species, after being referred with doubt to *Cyclotus*, has been removed in Mr. Cuming's cabinet to *Leptopoma*.

Species 44. (Mus. Cuming.)

LEPTOPOMA TENEBRICOSUM. *Lept. testā modicē umbilicatā, subglobozo-turbinatā, sordidē castaneā, obscure strigatā, infra peripheriam zonulā pallidā cingulatā; anfractibus rotundatis, rugoso-striatis; aperturā circulari, labro tenuē reflexo.*

THE DARK LEPTOPOMA. Shell moderately umbilicated, rather globosely turbinated, dark chestnut, obscurely streaked, encircled with a pale zone beneath the periphery; whorls rounded, roughly striated: aperture circular, lip thinly reflected.

Cyclostoma tenebricosum, Adams and Reeve, Moll. Voy. Samarang, p. 57. pl. 14. f. 6.

Leptopoma tenebricosum, Pfeiffer.

Hab. Balambangan, Borneo; Belcher.

A dark-chestnut shell of very simple character.



46 b.



47 a.



48 a.



48 b.



49 b.



49.



50



51.

LEPTOPOMA.

PLATE VIII.

Species 45. (Mus. Cuming.)

LEPTOPOMA CONULUS. *Lept. testâ angustè umbilicatâ, conicâ, tenui, epidermide fulco-corneâ indutâ; anfractibus rotundatis, spiraliter minutissimè filoso-liratis, liris distantibus; aperturâ parvâ, circulari, labro simplici.*

THE LITTLE CONE LEPTOPOMA. Shell narrowly umbilicated, conical, thin, covered with a fulvous horny epidermis; whorls rounded, spirally very minutely thread-ridged, ridges distant; aperture small, circular, lip simple.

Cyclostoma conulus, Pfeiffer, Pro. Zool. Soc. 1854. p. 127.

Leptopoma conulus, Pfeiffer.

Hab. Ceylon; Thwaites.

The smallest species of the genus forming a rather depressed turbinated cone of rounded ridges.

Species 46. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA PÆCILUM. *Lept. testâ excavato-umbilicatâ, turbinatâ, purpurascente-fuscâ, flammis albidis et lineis spiralibus nigricantibus ornatâ; anfractibus rotundatis, ad suturas impressis, medio filoso-liratis; aperturâ parviusculâ, circulari, labro vix reflexo.*

THE VARI-PICTURED LEPTOPOMA. Shell excavately umbilicated, turbinated, purple-brown, ornamented with whitish flames and dark spiral lines; whorls rounded, impressed at the sutures, thread-ridged in the middle; aperture rather small, circular, lip scarcely reflected.

Cyclostoma pæcilum, Pfeiffer, Pro. Zool. Soc. 1854. p. 302.

Leptopoma pæcilum, Pfeiffer.

Hab. Ceylon; Thwaites.

* A pretty variegated species, with the thread ribs of a conspicuous dark colour.

Species 47. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA FLAMMEUM. *Lept. testâ angustè umbilicatâ, elevato-conicâ, turbinatâ, albidâ, strigis fulvo-castaneis undique flammâtâ; anfractibus rotundatis, obliquè confertim rugoso-striatis; aperturâ parviusculâ, circulari, labro vix reflexo.*

THE FLAMED LEPTOPOMA. Shell narrowly umbilicated, elevately conical, turbinated, whitish, flamed throughout with fulvous chestnut streaks; whorls rounded,

obliquely closely rugosely striated; aperture rather small, circular, lip scarcely reflected.

Cyclostoma flammeum, Pfeiffer, Pro. Zool. Soc. 1854. p. 127.

Leptopoma flammeum, Pfeiffer.

Hab. Ceylon; E. L. Layard.

This species is composed of a whorl more than the preceding species and its allies, which gives the shell a more elongately conical form.

Species 48. (Fig. a, b, Mus. Cuming.)

LEPTOPOMA DUPLICATUM. *Lept. testâ angustè umbilicatâ, globoso-turbinatâ, fuscâ, rufo-castaneo undique angustè fulguratâ; anfractibus convexis, ultimo subinflato, spiraliter filoso-liratis, liris distantibus, interstitiis obliquè striatis; aperturâ circulari, subamplâ, labro latè plano-expanso, duplicato.*

THE DUPLICATE LEPTOPOMA. Shell narrowly umbilicated, globosely turbinated, fulvous, narrowly light-rim-waved throughout with reddish chestnut; whorls convex, the last rather inflated, spirally thread-ridged, ridges rather distant, interstices obliquely striated; aperture circular, rather large, lip broadly expandedly reflected, duplicate.

Cyclostoma duplicatum, Pfeiffer, Pro. Zool. Soc. 1856. p. 338.

Leptopoma duplicatum, Pfeiffer.

Hab. Cochin China.

In this little species from Cochin China the thread ribs are closer set than in any other.

Species 49. (Mus. Cuming.)

LEPTOPOMA HALOPHILUM. *Lept. testâ angustè umbilicatâ, conico-turbinatâ, futescente, rufo-castaneo flammâtâ et interdum fuscâ; anfractibus rotundatis, obliquè confertim rugoso-striatis; aperturâ parviusculâ, circulari, labro vix reflexo.*

THE SEA-LOVING LEPTOPOMA. Shell narrowly umbilicated, conically turbinated, fulvous, flamed and sometimes banded throughout with reddish-chestnut; whorls

rounded, obliquely closely rugosely striated; aperture rather small, circular, lip scarcely reflected.

Cyclostoma kalophilum, Benson, Ann. and Mag. Nat. Hist. vol. vii. p. 265.

Leptopoma kalophilum, Pfeiffer.

Hab. Ceylon.

This little species belongs to the more simple form of *Leptopoma*, without thread-ridges or flatly expanded lip. Mr. Benson informs me that his specimens were found at the Fort of Point de Galle, close where the surf was breaking against the bastion.

Species 50. (Mus. Cuming.)

LEPTOPOMA SUBCONIGUM. *Lept. testâ angustè umbilicatâ, conico-turbinatâ, tenui, fulvâ, rufo-caesaneo undique confertim flammâtâ; anfractibus rotundatis, spiraliter subconfertim filoso-liratis; aperturâ parviusculâ, circulari, labro rix reflexo.*

THE SUBCONICAL LEPTOPOMA. Shell narrowly umbilicated, conically turbinated, thin, fulvous, closely flamed throughout with reddish-chestnut; whorls rounded, spirally somewhat closely thread-ridged: aperture rather small, circular, lip scarcely reflected.

PREIFFER, Pro. Zool. Soc. 1859. p. 27.

Hab. Ceylon; Thwaites.

The general colouring of this species resembles that of the two preceding, but in form and sculpture it belongs to the prevailing Borneo and Philippine type of the genus.

Species 51. (Mus. Cuming.)

LEPTOPOMA OROPHILUM. *Lept. testâ angustè umbilicatâ, elevato-conicâ, turbinatâ, albidâ, rufo-caesaneo nudique subangustè flammâtâ; anfractibus rotundatis, obliquè confertim rugoso-striatis, spiraliter, obsolete minutissimè filoso-liratis; aperturâ parviusculâ, circulari, labro rix reflexo.*

THE MOUNTAIN-LOVING LEPTOPOMA. Shell narrowly umbilicated, elevately conical, turbinated, whitish, rather narrowly flamed throughout with reddish-chestnut. whorls rounded, obliquely rugosely striated, spirally obsolete very minutely thread-striated; aperture small, circular, lip scarcely reflected.

Cyclostoma orophilum, Benson, Ann. and Mag. Nat. Hist. vol. ii. p. 106.

Leptopoma orophilum, Pfeiffer.

Hab. Ceylon.

There are traces in this species of the spiral threads characteristic of the last, but they are almost obsolete.

LEPTOMMA.

<i>acuminatum</i> (<i>Cyclostoma</i>), Sowerby	I.	2	<i>luteostoma</i> (<i>Cyclostoma</i>), Sowerby	VI.	37
<i>acutimarginatum</i> (<i>Cyclostoma</i>), Sowb.	I.	4	<i>luteum</i> (<i>Cyclostoma</i>), Lesson	VI.	32
<i>apicatum</i> , <i>Benson</i>	VI.	33	<i>lutenum</i> (<i>Cyclostoma</i>), Quoy	III.	15
<i>aspirans</i> , <i>Benson</i>	IV.	18	<i>maculosum</i> (<i>Cyclostoma</i>), Souleyet	III.	17
<i>atricapilla</i> (<i>Cyclostoma</i>), Sowerby	I.	6	<i>Massense</i> (<i>Cyclostoma</i>), Lesson	II.	10
<i>barbatum</i> , <i>Pfeiffer</i>	VII.	12	<i>melanostoma</i> (<i>Cyclostoma</i>), Petit	V.	29
<i>bicolor</i> , <i>Pfeiffer</i>	II.	13	<i>Menadense</i> , <i>Pfeiffer</i>	IV.	19
<i>Chinense</i> , <i>Pfeiffer</i>	VII.	13	<i>Mouhoti</i> , <i>Pfeiffer</i>	V.	25
<i>ciliatum</i> (<i>Cyclostoma</i>), Sowerby	VII.	39	<i>multilabre</i> (<i>Cyclostoma</i>), Quoy	II.	10
<i>cinctellum</i> , <i>Pfeiffer</i>	IV.	23	<i>nigricans</i> , <i>Pfeiffer</i>	VII.	11
<i>concinnum</i> (<i>Cyclostoma</i>), Sowerby	V.	27	<i>nitidum</i> (<i>Cyclostoma</i>), Sowerby	III.	15
<i>conulus</i> , <i>Pfeiffer</i>	VIII.	45	<i>orophilum</i> , <i>Benson</i>	VIII.	51
<i>cybens</i> , <i>Benson</i>	I.	7	<i>Panayense</i> (<i>Cyclostoma</i>), Sowerby	VI.	31
<i>decipiens</i> , <i>Pfeiffer</i>	IV.	20	<i>pellucidum</i> (<i>Cyclostoma</i>), Grateloup	V.	27
<i>duplicatum</i> , <i>Pfeiffer</i>	VIII.	48	<i>perplexum</i> (<i>Cyclostoma</i>), Sowerby	III.	16
<i>elatum</i> , <i>Pfeiffer</i>	I.	3	<i>pileus</i> (<i>Cyclostoma</i>), Sowerby	IV.	22
<i>fibula</i> (<i>Cyclostoma</i>), Sowerby	I.	5	<i>porcilum</i> , <i>Pfeiffer</i>	VIII.	16
<i>flammum</i> , <i>Pfeiffer</i>	VIII.	47	<i>pulicarium</i> , <i>Pfeiffer</i>	V.	28
<i>globulosum</i> , <i>Pfeiffer</i>	IV.	24	<i>regulari</i> , <i>Pfeiffer</i>	III.	14
<i>goniostoma</i> (<i>Cyclostoma</i>), Sowerby	I.	1	<i>Sechellianum</i> , <i>Pfeiffer</i>	II.	9
<i>hnlophilum</i> , <i>Benson</i>	VIII.	49	<i>semiclausum</i> , <i>Pfeiffer</i>	VI.	35
<i>Hanleyanum</i> , <i>Pfeiffer</i>	V.	30	<i>sericatum</i> , <i>Pfeiffer</i>	V.	26
<i>helicoïdes</i> (<i>Cyclostoma</i>), Grateloup	II.	11	<i>signatum</i> , <i>Pfeiffer</i>	VII.	40
<i>ignescens</i> , <i>Pfeiffer</i>	II.	8	<i>Stainforthii</i> (<i>Cyclostoma</i>), Sowerby	II.	11
<i>immaculatum</i> , <i>Pfeiffer</i>	III.	17	<i>subconicum</i> , <i>Pfeiffer</i>	VIII.	50
<i>insigne</i> (<i>Cyclostoma</i>), Sowerby	VI.	34	<i>tenebriosum</i> (<i>Cyclostoma</i>), Ad. & Rye	VII.	44
<i>leve</i> (<i>Turbo</i>), Wood	III.	17	<i>undatum</i> (<i>Cyclostoma</i>), Metcalfe	IV.	21
<i>latelimbatum</i> , <i>Pfeiffer</i>	II.	12	<i>vitreum</i> (<i>Cyclostoma</i>), Lesson	III.	15
<i>Lowi</i> , <i>Pfeiffer</i>	VII.	38	<i>Wallacei</i> , <i>Pfeiffer</i>	VI.	36

MONOGRAPH
OF THE GENUS
VITRINA.

“ Il faut donc admettre une communication intime entre la coquille et l'animal ; et croire que ce test est aussi animé de la force vitale, quoiqu'il paroisse brut et inorganique à nos yeux trop faibles pour en démêler la structure intérieure.”—*Draparnaud*.



2a.



2b



3a.



3b



1b.

VITRINA.

PLATE I.

Genus VITRINA, *Draparnaud*.

Testa imperforata, depressè globosa vel auriformis, ad basin interdum omnino aperta, pellucido-cornèa, submembranacea, plus minus nitens, spirā parvā, viz emersā, anfractibus tribus ad quatuor, rapidè accrescentibus, plerumque arcuatim plicato-striatis; aperturā amplā, obliquè lunari.

Shell imperforate, depressly globose or ear-shaped, sometimes altogether open at the base, transparent horny, submembranaceous, more or less shining, spire small, scarcely emerged, whorls three to four, increasing rapidly, generally arcuately plicately striated; aperture large, obliquely lunar.

Vitrina is a mollusc of great interest in the series. It possesses the fleshy shield of the slug, along with the spirally whorled shell of the snail. The shell is merely a horny membranaceous secretion, composed of only from two and a half to four whorls; and it is too small for the animal to retire into. The shell is highly polished, with no marking beyond a reddish linear band in one or two species, and it differs very little in typical form over a wide range of geographical distribution.

About eighty species of *Vitrina* have been described, all inhabitants of the Eastern Hemisphere, excepting one a native of Greenland, and one in the United States which may have derived its origin from a transported European species. The shell inclines especially to a membranaceous consistency at the base, the part in more immediate contact with the animal; and some half-dozen, collected together in our Plate X., and forming the genus *Peltella* of Webb and Van Beneden, are without any reflected base. Six of the *Vitrinae* are European, one only, *V. pellucida*, British. Africa, south, east, and west, contributes fifteen species, distinct from the European. Madeira has three species, two of which are of the *Peltella* section, the Philippine Islands fifteen, Ceylon five, India eight, Burmah and Siam four, Borneo, Malacca and Celebes four, Tasmania and Australia seven, and New Caledonia and the neighbouring isles three. There is no record of any *Vitrina* in the New World, beyond the two northern species already mentioned. But the genus is represented at Mexico and Brazil by a very characteristic type, *Simpulopsis*, in which the shell is plicately ribbed and more inflated, with a less vitrified polish.

Species 1. (Mus. Cuming.)

VITRINA NATALENSIS. *Vitr. testā depresso-globosa, olivaceo-cornèa, supra peripheriam fasciā latā rufescente tinctā, anfractibus brevibus, ventricosus, celeriter accrescentibus, levibus, nitentibus; aperturā parviusculā, labro juxta columellam tenuè callosa-reflexo.*

THE NATAL VITRINA. Shell depressly globose, olive-horny, tinged with a broad reddish band above the periphery, whorls short, ventricose, increasing quickly, smooth, shining; aperture rather small, lip thinly callously reflected, next the columella.

KRAUSS, Moll. Südafrie. p. 74. pl. 4. f. 17.

Hab. Natal.

Distinguished by its globose form, and in having the upper portion of the whorls tinged with a broad transparent reddish band.

Species 2. (Fig. a, Mus. Cuming; fig. b, Mus. Taylor.)

VITRINA SOWERBYANA. *Vitr. testā depressè auriformi, brunneo-fultā, aeneo-tinctā, spirā viz emersā, anfractibus angustis, concentricè plicato-striatis et corrugatis, ad suturas impressis, ad peripheriam obtusè angulatis, aperturā perobliquā, margine plus minus membranaceo.*

SOWERBY'S VITRINA. Shell depressly ear-shaped, brownish-fulvous, bronze-tinged, spire but little emerged, whorls narrow, concentrically plicately striated and wrinkled, impressed at the sutures, obtusely angled at the periphery; aperture very oblique, margin more or less membranaceous.

PFEIFFER, Pro. Zool. Soc. 1848, p. 107.

Hab. West Africa.

A very depressed auriform shell, of a peculiar bronze tinge, radiately plicately wrinkled.

Species 3. (Fig. a, b, Mus. Taylor.)

VITRINA GIGAS. *Vitr. testā depressā, ampliter obliquè auriformi, virescente-olivaceā, subopacā, spirā parvā, planatā, anfractibus concentricè striatis, velociter accrescentibus, superuè plano-declinibus, ad peripheriam rotundatis; aperturā perampliter patentē.*

THE GIANT VITRINA. Shell depressed, largely obliquely auriform, greenish-olive, rather opaque, spire small, flattened, whorls concentrically striated, very quickly

increasing, flatly sloping at the upper part, rounded at the periphery; aperture very largely open.

BENSON, Journ. Asiatic Soc. vol. v. p. 350.

Hab. Cherra, on the mountains above Teria Ghât, India; Theobald.

A very distinct form of *Vitrina*, composed of only two and a half whorls. The coiled portion of the shell is therefore very small and simple, while the last whorl is largely obliquely produced.

Species 4. (Fig. *a, b*, Mus. Cuming.)

VITRINA FLEMINGI. *Vitr. testâ orbiculari-depressâ, olivaceo-corneâ, solidiusculâ, anfractibus conceis, subrudè plicato-striatis; aperturâ lunari-ovalâ, margine submembranaceo.*

FLEMING'S VITRINA. Shell orbicularly depressed, olive-horny, rather solid, whorls convex, somewhat rudely plicately striated; aperture lunar-ovate, margin submembranaceous.

PFEIFFER, Pro. Zool. Soc. 1856, p. 324.

Hab. Scinde, India; Dr. Alexander Fleming.

Of a much rounder form than the preceding species, with a broader axis of convolution.

Species 5. (Mus. Cuming.)

VITRINA IRRADIANS. *Vitr. testâ depressâ, orbiculari-auriformi, fulvescente-corneâ, anfractibus concentricè plicato-striatis, superne lineis impressis spiralibus de-*

cessatis; aperturâ obliquè lunari-ovalâ, margine submembranaceo.

THE RAYED VITRINA. Shell depressed, orbicularly auriform, fulvous horny, whorls concentrically plicately striated, decussated round the upper part with spiral impressed lines; aperture obliquely lunar-ovate, margin submembranaceous.

PFEIFFER, Pro. Zool. Soc. 1852, p. 156, pl. 13.

Hab. Ceylon.

There is a character in this species, which is not of frequent occurrence in the genus; the upper half of the whorls is engraved with impressed spiral lines.

Species 6. (Mus. Cuming.)

VITRINA HANS. *Vitr. testâ convexo-depressâ, subglobosâ, solidiusculâ, carneâ, epidermide corneâ flavicante-olivaceâ indutâ, spirâ subemersâ, anfractibus modicè plicato-striatis, ultimo lineis perpaucis spiralibus impressis, prope aperturam decussato, aperturâ rotundato-lunari.*

THE Gaping VITRINA. Shell convexly depressed, rather globose, rather solid, flesh-tinted, covered with a yellowish-olive epidermis, spire a little emerged, whorls moderately plicately striated, last whorl decussated near the aperture with a few impressed spiral lines; aperture rotundately lunar.

PFEIFFER, Pro. Zool. Soc. 1848, p. 157.

Hab. Abyssinia; Dr. Rüppell.

This shell, it will be seen, is convoluted on a broader axis than the last, and it is of rather more solid growth.



Sowerbushii et hith

VITRINA.

PLATE II.

Species 7. (Mus. Benson.)

VITRINA SALIUS. *Vitr. testā parum depressā, tenui, pellucidā, fuscescente-cornēā, anfractibus subgloboso-inflatis.*

THE SALIUS VITRINA. Shell but little depressed, thin, transparent, brownish-horny, whorls rather globosely inflated.

BENSON, Ann. and Mag. Nat. Hist. 1859, vol. iii. p. 189.
Hab. Khasia Hills, Hindustan; Theobald.

From its habit of springing several inches from the ground, Mr. Benson has named this *Vitrina* after the Saliar priest of mythological Rome, whose particular office it was to leap and dance at the festivals. The habit applies very generally to the genus. Mr. Cuming observed, when collecting *Vitrinae* at the Philippine Islands, that on placing them on the palm of his hand they would perform a succession of muscular leaps.

Species 8. (Mus. Benson.)

VITRINA SUCCINA. *Vitr. testā depressā, tenui, viridē succino-cornēā, valdē pellucidā, spirā planatā, anfractibus angustis, ultimo subproducto.*

THE AMBER VITRINA. Shell depressed, thin, bright amber-horny, very transparent, spire flat, whorls narrow, the last rather produced.

Vitrina planospira, Benson (not of Pfeiffer), Ann. and Mag. Nat. Hist. 1859, vol. iii. p. 271.

Hab. Khasia Hills; W. T. Blandford. Darjeeling, Sikkim Himalaya; H. F. Benson.

This species, which has been obligingly forwarded to me by Mr. Benson, is flatter and more narrowly produced at the aperture than the preceding species. It is of a particularly bright amber colour.

Species 9. (Mus. Benson.)

VITRINA BENSONI. *Vitr. testā globoso-inflatā, tenui, pallide cornēā, spirā parvā, anfractibus declivi-rotundatis, longitudinaliter obscure irregulariter plicato-striatis.*

BENSON'S VITRINA. Shell globosely inflated, thin, pale-horny, spire small, whorls slopingly rounded, longitudinally obscurely irregularly plicately striated.

FRANK, Pro. Zool. Soc. 1848, p. 107.

Hab. Howrah, near Calcutta; Benson.

A pale globose form, with the upper half of the whorls rather sloping.

Species 10. (Fig. a, b, Mus. Benson.)

VITRINA CASSIDA. *Vitr. testā depressā, viridescēte-cornēā, subopacā, spirā subamplā, cæsertusculā, anfractibus angustis, concentricè tenuissimè plicato-striatis.*

THE HELMET VITRINA. Shell depressed, greenish-horny, rather opaque, spire rather large, a little exerted, whorls narrow, concentrically very finely plicately striated.

Helicarion cassida, Hutton, Journ. Asiatic Soc. vol. vii. p. 214.

Vitrina cassida, Pfeiffer.

Hab. Simla, Western Himalaya.

The spire is rather larger and more exerted than usual, although the whorls are still narrow and depressed.

Species 11. (Fig. a, b, Mus. Taylor.)

VITRINA MONTICOLA. *Vitr. testā depressiusculā, tenui, pellucido-cornēā, spirā rix exsertā, anfractibus angustis, interdum subglobosis, obscure tenuistriatis, nitidis.*

THE MOUNTAIN VITRINA. Shell rather depressed, thin, transparent-horny, spire scarcely exerted, whorls narrow, sometimes rather globose, obscurely finely striated, shining.

BENSON, Pfeiffer, Pro. Zool. Soc. 1848, p. 104.

Hab. Bengal, Himalaya, etc.

Mr. Taylor possesses specimens of this species collected at various elevations up to 11,600 feet; the most lofty-inhabiting being the smallest.

Species 12. (Fig. a, b, Mus. Benson.)

VITRINA PRESTANS. *Vitr. testā depresso-semiglobosā, rufescente-cornēā, spirā parvā, subplanatā, anfractibus declivi-concavis, longitudinaliter dense striatis, ultimo ampliter inflato, peripheriā depressā, versus basin obtuse angulatā.*

THE EXCELLING VITRINA. Shell depressly semiglobose, reddish-horny, spire small, rather flat, whorls slopingly convex, longitudinally densely striated, last whorl largely inflated, periphery depressed, obtusely angled towards the base.

GOULD, Journ. Nat. Hist. Soc. Boston, vol. iv. p. 456. pl. 24. f. 2.

Hab. Tavoy, Burmah; Gould. Moulmein, India; Benson.

Of quite a distinct type from the preceding, the spire being very small, while the last whorl is largely inflated, with the periphery pressed down, as it were, towards the base into an obtuse angle.

Species 13. (Mus. Benson.)

VITRINA SCUTELLA. *Vitr. testâ valdè depressâ, virescente-cornâ, spirâ subimmersâ, suturâ impressâ, anfractibus perangustis, subdiscoideis, longitudinaliter densè plicatis, ultimo ad aperturam producto.*

THE SAUCER VITRINA. Shell very depressed, greenish-horny, spire rather immersed, suture impressed, whorls very narrow, somewhat discoid, longitudinally densely plicately striated, last whorl produced at the aperture.

BENSON, Ann. and Mag. Nat. Hist. 1859. vol. iii. p. 188.

Hab. Khasia Hills, Hindustan.

An unusually narrow-whorled shell, with the spire a little immersed.



18 b.



19 a



19 b.



20.

VITRINA.

PLATE III.

Species 14. (Mus. Cuning.)

VITRINA VIRENS. *Vitr. testâ depressâ, subauriformi, virescente-olivaceâ, cornedâ, parum nitente, spirâ subplanatâ, suturâ impressâ, anfractibus obscure striatis, ad peripheriam rotundatis; aperturâ obliquè lunari-ovatâ.*

THE GREENISH VITRINA. Shell depressed, somewhat auriform, greenish-olive, horny, but little shining, spire rather flattened, suture impressed, whorls obscurely striated, rounded at the periphery: aperture obliquely lunar-ovate.

PFEIFFER, Pro. Zool. Soc. 1848, p. 108.

Hab. Moreton Bay, Australia.

A rather dull greenish-olive shell, with little indication of striae.

Species 15. (Mus. Cuning.)

VITRINA CUVIERI. *Vitr. testâ depresso-auriformi, flavicautè-olivaceâ, corâ, nitente, spirâ planatâ, anfractibus angustis, dense subtilissimè plicato-striatis; aperturâ perobliquè lunari-ovatâ, margine membranaceo.*

CUVIER'S VITRINA. Shell depressly auriform, yellowish-olive, horny, shining, spire flattened, whorls narrow, densely very finely plicately striated; aperture very obliquely lunar-ovate, margin membranaceous.

Helicarian Cuvieri, Férussac, Prodr. p. 20; Hist. pl. 9. f. 8, and pl. 9 A. f. 1, 2.

Vitrina Cuvieri, Gray.

Helicarian Cuvieri, Beck.

Hab. Madeira.

A pale yellowish-horny shell, highly polished, though crowded with fine plicated striae.

Species 16. (Mus. Cuning.)

VITRINA RUPPELLIANA. *Vitr. testâ subsemiglobosâ, tenui, pellucido-cornedâ, spirâ subemersâ, anfractibus declivi-converis, arcuatim corrugato-striatis, peripheriâ obtusè angulatâ; aperturâ obliquè lunari-rotundatâ.*

RUPPELL'S VITRINA. Shell subsemiglobose, thin, transparent horny, spire rather emerged, whorls slopingly convex, arcuately wrinkle-striated, periphery obtusely angled; aperture obliquely lunar-rounded.

PFEIFFER, Pro. Zool. Soc. 1848, p. 107.

Hab. Abyssinia.

The periphery of the last whorl is pressed down towards the base in a peculiar manner into an obtuse angle.

Species 17. (Mus. Taylor.)

VITRINA MAGNIFICA. *Vitr. testâ depressâ, subauriformi, pellicido-olivaceâ, variegatâ, spirâ convexâ, rix emersâ, anfractibus radialim corrugato-striatis, ad peripheriam rotundatis; aperturâ lunari-ovatâ, obliquè transversim productâ.*

THE MAGNIFICENT VITRINA. Shell depressed, somewhat auriform, transparent olive, variegated, spire convex, scarcely emerged, whorls radiately wrinkle-striated, rounded at the periphery, aperture lunar-ovate, obliquely transversely produced.

Hab. — — ?

This fine species, of which there is a fine example in Mr. Cuning's as well as in Mr. Taylor's collection, comes nearest to *V. Flemingi*. It differs slightly in form, and there is a peculiarity in the radiately-wrinkled sculpture and variegated manner of colouring.

Species 18. (Mus. Cuning.)

VITRINA MILLIGANI. *Vitr. testâ subgloboso-ovatâ, nigricautè-olivaceâ, politissimâ, spirâ parvâ, convexâ, undulè emersâ, anfractibus declivi-ventricosâ; aperturâ obliquè ovatâ, marginibus convergentibus.*

MILLIGAN'S VITRINA. Shell somewhat globosely ovate, blackish-olive, very polished, spire small, convex, moderately emerged, whorls slopingly ventricose; aperture obliquely ovate, margins approximating.

PFEIFFER, Pro. Zool. Soc. 1852, p. 56.

Hab. Tasmania (at a small island in Macquarie Harbour); Milligan.

An unusually dark swarthy-olive shell, remarkably shining, named in honour of its discoverer, the Secretary of the Royal Society of Tasmania.

Species 19. (Mus. Cuning.)

VITRINA CEMINGII. *Vitr. testâ globosâ, parum depressâ, albido-cornedâ, semipellucidâ, nitente, lineâ conspicuâ rufâ supra peripheriam cingulatâ, spirâ convexâ, parum*

emersâ, anfractibus subcentricosis, subtilissimè decussatione striatis; aperturâ lunari-rotundatâ.

CUMING'S VITRINA. Shell globose, but little depressed, whitish horny, semitransparent, shining, encircled above the periphery by a conspicuous red line, spire convex, but little emerged, whorls rather ventricose, very finely decussately striated; aperture lunar-rounded.

BECK, Pfeiffer, Pro. Zool. Soc. 1848, p. 104.

Hab. Island of Bohol, Philippines; Cuming.

An interesting species of semitransparent pearly-white substance, encircled by a conspicuous red line, which in the early whorls falls in the place of the suture.

Species 20. (Mus. Cuming.)

VITRINA SIAMENSIS. *Vitr. testâ depressè semiglobosâ, tenui, virescente-olivaceâ, spirâ parum emersâ, anfractibus ad suturas impressis, deinde declivi convexis, ad peripheriam rotundatis; aperturâ obliquè lunari-ovata.*

THE SIAM VITRINA. Shell depressly semiglobose, thin, greenish-olive, spire but little emerged, whorls impressed at the suture, then slopingly convex, rounded at the periphery; aperture obliquely lunar-ovate.

HAINES, Ann. Lyc. Nat. Hist. New York, 1855, vol. vi. p. 158.

Hab. Siam.

A rather dull shell, belonging to the type in which the periphery of the whorls slopes towards the base in an obtusely-rounded angle.





23



25 b



25 b



26



27



28

VITRINA.

PLATE IV.

Species 21. (Mus. Cuning.)

VITRINA VERREAUXI. *Vitr. testâ depressâ auriformi, tenui, virescente-olivacea, fusco interdum lineatâ, spirâ parâ, suturâ impressâ, anfractibus angustis, arcuatim plicato-striatis, ultimo producto; aperturâ amplâ, obliquè lunari-ovalâ.*

VERREAUX'S VITRINA. Shell depressly auriform, thin, greenish-olive, sometimes tinged with brown, spire small, suture impressed, whorls narrow, arcuately plicately striated, last whorl produced; aperture large, obliquely lunar-ovate.

PFEIFFER, Pro. Zool. Soc. 1849, p. 132.

Hab. Australia; Verreaux.

Distinguished chiefly by its narrowly-produced transverse form.

Species 22. (Mus. Cuning.)

VITRINA BECKIANA. *Vitr. depressâ semiglobosâ, flavido-corneâ, politissimâ, spirâ convexâ, submersâ, anfractibus rotundatis, subtiliter plicato-striatis; aperturâ parâ obliquâ, lunari-rotundatâ.*

BECK'S VITRINA. Shell depressly semiglobose, yellowish horny, very polished, spire convex, slightly emerged, whorls rounded, finely plicately striated; aperture but little oblique, lunar-rounded.

PFEIFFER, Pro. Zool. Soc. 1849, p. 105.

Hab. Islands of Negros, Siquijor, and Guimaras, Philippines; Cuning.

A yellowish horny shining species, of simple character.

Species 23. (Mus. Cuning.)

VITRINA LEYTENSIS. *Vitr. testâ depressâ semiglobosâ, flavido-corneâ, spirâ subplanulatâ, anfractibus subangustis, subtiliter plicato-striatis; aperturâ obliquâ, lunari-rotundatâ.*

THE LEYTE VITRINA. Shell depressly semiglobose, yellowish horny, spire rather flat, whorls somewhat narrow, finely plicately striated; aperture oblique, lunar-rounded.

PFEIFFER, Pro. Zool. Soc. 1848, p. 105.

Hab. Island of Leyte, Philippines; Cuning.

There is a little difference in form between this and the preceding species, but it is scarcely appreciable. The

spire inclines to be more depressed and the whorls become narrower but less produced.

Species 24. (Mus. Cuning.)

VITRINA CORNEA. *Vitr. testâ subdepressâ globosâ, pellucido-corneâ, tenuissimâ, fasciâ angustâ rufa-fusca supra peripheriam circulatâ, spirâ convexâ, parâ emersâ, anfractibus arcuatim plicato-striatis; aperturâ obliquè lunari-rotundatâ.*

THE HORN VITRINA. Shell somewhat depressly globose, transparent horny, very thin, encircled above the periphery with a narrow red-brown band, spire convex, but little emerged, whorls arcuately plicately striated; aperture obliquely lunar-rounded.

PFEIFFER, Symb. part. iii. p. 81; Monog. Helic. Viv. vol. ii. p. 505.

Hab. Natal.

A beautifully transparent shell, of the thinnest horny substance, encircled with a characteristic red-brown band.

Fig. 25 a, b. (Mus. Cuning.)

The shell here figured is the type of Dr. Pfeiffer's *Vitrina heliciformis* (Pro. Zool. Soc. 1851, p. 296), subsequently described by him (Pro. Zool. Soc. 1856, p. 326) as a *Helic*, under the name *H. Ophiria*. It is a thin membranaceous horny shell, with very much the appearance of a *Vitrina*, but is angulated at the periphery in a manner not to be found in that genus, and is characterized by a peculiar opal-white milky deposit about the apex. It was collected at Mount Ophir, Malacca, by Dr. Traill.

Species 26. (Mus. Cuning.)

VITRINA CRENULARIS. *Vitr. testâ depressâ semiglobosâ, aurescente-corneâ, pellucidâ, spirâ planatâ, anfractibus declivi-convexis, subconspicue arcuatim plicato-striatis; aperturâ obliquè lunari-rotundatâ.*

THE CRENULATED VITRINA. Shell depressly semiglobose, golden horny, transparent, spire flattened, whorls slopingly convex, rather conspicuously arcuately plicately striated; aperture obliquely lunar-rounded.

BECK, Pfeiffer, Pro. Zool. Soc. 1848, p. 106.

Hab. Islands of Negros and Zebu, Philippines; Cuning.

A bright transparent golden-horny shell, with the usual striae of growth rather prominently plicated, but scarcely in such a manner as to be called crenulated.

Species 27. (Mus. Cuming.)

VITRINA RESILIENS. *Vitr. testā depressè semiglobosā, aureo-corneā, pellucidā, spirā convexiusculā, vix emersā, anfractibus declivi-concavis, subconspiciēte arcuatim plicato-striatis; aperturā obliquē lunari-rotundatā.*

THE SKIPPING VITRINA. Shell depressly semiglobose, golden-horny, transparent, spire rather convex, scarcely emerged, whorls slopingly convex, rather conspicuously arcuately plicately striated; aperture obliquely lunar-rounded.

BECK, Pfeiffer, Pro. Zool. Soc. 1848, p. 106.

Hab. Island of Zebu, Philippines; Cuming.

The typical specimens of this species are rather more globose than those of the preceding, with the apex less flattened; and the animal of *V. resiliens* is described by Mr. Cuming as being white, whilst in *V. crenularis* it is yellow. The name *resiliens* is intended to denote the

skipping habit of the animal. When Mr. Cuming picked them off the bushes at the Philippine Islands and placed them on the palms of his hands, they kept up a succession of muscular leaps. This habit in *Vitrina* has been also noticed in India by Mr. Benson and Mr. Theobald.

Species 28. (Mus. Cuming.)

VITRINA BICOLOR. *Vitr. testā globosā, tenuissimā, opalino-corneā, nitidissimā, spirā convexā, vix emersā, anfractibus arcuatim plicato-striatis, rotundatis, ventricosus; aperturā ampliā, rotundatā.*

THE TWO-COLOURED VITRINA. Shell globose, very thin, opal-horny, very shining, spire convex, scarcely emerged, whorls arcuately plicately striated, rounded, ventricose; aperture large, rounded.

BECK, Pfeiffer, Pro. Zool. Soc. 1848, p. 104.

Hab. Island of Guimaras, Philippines; Cuming.

A full globose opal-horny shell, quite distinct in form and texture from the two preceding. The species is named two-coloured from the colours of the animal, which is described by Mr. Cuming as having the head black and the body white.





30



32 a

33 a



33 b



32 b



35



36

VITRINA.

PLATE V.

Species 29. (Mus. Cuming.)

VITRINA RUFESCENS. *Vitr. testā subglobosā, tenuissimā, rufescente-corneā, spirā convexā, subemersā, anfractibus rotundatis, tenuē plicatis; aperturā lunari-rotundatā.*

THE REDDISH VITRINA. Shell nearly globose, very thin, reddish horny, spire convex, rather emerged, whorls rounded, finely plicated; aperture lunar-rounded.

PFEIFFER, Pro. Zool. Soc. 1848, p. 106.

Hab. Island of Mindoro, Philippines; Cuming.

A bright transparent horny shell, distinguished by its globose form.

Species 30. (Mus. Cuming.)

VITRINA PLANULATA. *Vitr. testā depressissimā, auriformi, pellucido-corneā, spirā planatā, anfractibus perangustis, plicato-striatis; aperturā amplissimā, perobliquā.*

THE FLAT VITRINA. Shell very depressed, ear-shaped, transparent horny, spire flattened, whorls very narrow, plicately striated; aperture very large and oblique.

PFEIFFER, Pro. Zool. Soc. 1848, p. 106.

Hab. Island of Luzon, Philippines; Cuming.

A very depressed species, approaching to the *Petella* form of the genus described at Plate X.

Species 31. (Mus. Cuming.)

VITRINA PAPILLATA. *Vitr. testā depressā, suborbiculari, pallidē corneā, pellucido-vitrēā, spirā parvā, medio papillatā, anfractibus angustis, breviusculis, subtilissimē plicato-striatis; aperturā obliquē rotundatā.*

THE PAPILLARY VITRINA. Shell depressed, nearly orbicular, pale horny, transparent glassy, spire small, papillary in the middle, whorls narrow, rather short, very finely plicately striated; aperture obliquely rounded.

PFEIFFER, Pro. Zool. Soc. 1848, p. 106.

Hab. Island of Luzon, Philippines; Cuming.

Collected in the same locality as the preceding species, but certainly distinct. The papillary character ascribed to the apex arises from its being a little opaquely emerged.

Species 32. (Fig. a, b, Mus. Cuming.)

VITRINA DARNAUDI. *Vitr. testā semioratā, tenuissimā, virescente-corneā, parvā nitente, anfractibus decliviter-convexis, minutē malleatis et plicatis, ultima perobliquē producto; aperturā amplā, diagonali-oratā.*

DARNAUD'S VITRINA. Shell semiovalate, very thin, greenish horny, but little shining, whorls slopingly convex, minutely malleated and plicated, last whorl very obliquely produced; aperture large, diagonally ovate.

PFEIFFER, Pro. Zool. Soc. 1856, p. 325; Novit. Conch. p. 101, pl. 28, f. 19-21.

Hab. Sennaar, Nubia; Darnaud.

This very interesting Nubian type of *Vitrina* is convoluted in a more than usually diagonal manner. The surface shines with the dullness of an oiled surface.

Species 33. (Fig. a, b, Mus. Cuming.)

VITRINA GRANDIS. *Vitr. testā depressē auriformi, virescente-albā, apulino-corneā, spirā rix emersā, anfractibus angustis concentricē plicato-striatis et tenuiter corrugatis, ad suturas impressis, ad peripheriam obtusē angulatis; aperturā perobliquā.*

THE LARGE VITRINA. Shell depressly ear-shaped, greenish-white, opal horny, spire scarcely emerged, whorls narrow, concentrically plicately striated, and thinly wrinkled, impressed at the sutures, obtusely angled at the periphery; aperture very oblique.

PFEIFFER, Pro. Zool. Soc. 1848, p. 8.

Hab. Guinea, West Africa.

There is little to distinguish this species, excepting colour, from *V. Sowerbyana*, from the same locality; but this difference, whatever it may be worth, is remarkable. *V. Sowerbyana* is a dark bronze-tinged brown; *V. grandis* is a pale greenish opal-white.

Species 34. (Mus. Cuming.)

VITRINA MARGARITA. *Vitr. testā depresso-globosā, hyalino-corneā, spirā plano-convexā, anfractibus decliviter-convexis, latiusculis, confertim tenuē striatis; aperturā lunari-rotundatā.*

THE PEARL VITRINA. Shell depressly globose, hyaline horny, spire flatly convex, rather broad, closely finely striated; aperture lunar-rounded.

BECK, Pfeiffer, Pro. Zool. Soc. 1848, p. 104.

Hab. Island of Guimaras, Philippines; Cuming.

A delicate globose hyaline horny shell, with the striae of growth less inclined to be plicated than usual.

Species 35. (Mus. Cuming.)

VITRINA GUIMARASENSIS. *Vitr. testā depressè semiglobosā, virescente-corneā, parum nitente, subopacā, spirā subpapillari-convexā, anfractibus declivi-convexis, confertim arcuatim striatis; aperturā perobliquè lunari-oratā.*

THE GUIMARAS VITRINA. Shell depressly semiglobose, greenish horny, but little shining, rather opaque, spire rather papillary convex, whorls slopingly convex, closely arcuately striated; aperture very obliquely lunar-ovate.

BECK, Pfeiffer, Pro. Zool. Soc. 1848, p. 104.

Hab. Island of Guimaras, Philippines; Cuming.

Of a rather opaque greenish hue, convoluted in a slopingly convex manner.

Species 36. (Mus. Cuming.)

VITRINA POLITISSIMA. *Vitr. testā depressè globosā, ru-fescente-corneā, pellucidā, politissimā, anfractibus rotundatis, parum striatis, ad suturas impressis; aperturā lunari-rotundatā.*

THE VERY POLISHED VITRINA. Shell depressly globose, reddish horny, transparent, very polished, whorls rounded, but little striated, impressed at the sutures; aperture lunar-rounded.

BECK, Pfeiffer, Pro. Zool. Soc. 1848, p. 105.

Hab. Island of Zebu, Philippines (on the leaves of small trees); Cuming.

Mr. Cuming describes the animal of this species as being entirely black. The shell is a bright reddish horny substance, of almost glassy transparency.



39.



41 b.



40 b.



43.



44.

VITRINA.

PLATE VI.

Species 37. (Mus. Cuming.)

VITRINA CASTANEA. *Vitr. depressè ovali, castaneo-olivaceâ, pellucidâ, nitente, anfractibus angustis, convexiusculis, ultimo basi membranaceo-marginato; aperturâ parum obliquâ, lunari-ovali.*

THE CHESTNUT VITRINA. Shell depressly oval, chestnut-olive, transparent, shining, whorls narrow, rather convex, the last membranaceous-edged at the base; aperture but little oblique, lunar-oval.

PFEIFFER, Pro. Zool. Soc. 1852, p. 56.

Hab. Australia; Verreaux.

A bright transparent shell, of a rich chestnut-olive hue.

Species 38. (Mus. Cuming.)

VITRINA GRUNERI. *Vitr. testâ depressè globosâ, virenti-olivaceâ, parum nitente, spirâ vix elevata, anfractibus convexis, brevibus; aperturâ obliquè lunari-rotundatâ, marginibus conniventibus.*

GRUNER'S VITRINA. Shell depressly globose, greenish-olive, but little shining, spire scarcely raised, whorls convex, short; aperture obliquely lunar-rounded, margins approximating.

PFEIFFER, Symb. pt. iii. p. 81; Monog. Helic. viv. vol. ii. p. 498.

Hab. Arabia.

A small rounded shell, of a peculiar dull-greenish horny substance.

Species 39. (Mus. Cuming.)

VITRINA LUZONICA. *Vitr. testâ depressè oblongâ, aureo-corneâ, pellucido-nitente, spirâ planatâ, anfractibus angustis, concentricè plicato-striatis; aperturâ perobliquâ, lunari-ovalâ.*

THE LUZON VITRINA. Shell depressly-oblong, golden horny, transparent shining, spire flattened, whorls narrow, concentrically plicately striated; aperture very oblique, lunar-ovate.

PFEIFFER, Pro. Zool. Soc. 1849, p. 132.

Hab. Island of Luzon, Philippines; Cuming.

A very thin, bright, almost glassy shell, very obliquely produced in form.

Species 40. (Fig. a, b, Mus. Cuming.)

VITRINA FREYCINETI. *Vitr. testâ depressè ovatâ, sabau-riformi, virescente-olivaceâ, spirâ convexâ, planatâ, anfractibus angustis, arcuatis subirregulariter plicato-striatis; aperturâ subampulâ, latè lunari-ovatâ, marginibus membranaceo.*

FREYCINET'S VITRINA. Shell depressly ovate, somewhat ear-shaped, greenish-olive, spire convexly flattened, whorls narrow, arcuately somewhat irregularly plicately striated; aperture rather large, broadly lunar-ovate, margin membranaceous.

PERUSSAC, Hist. Moll. pl. 9 A. f. 3, 4. pl. 9 B. f. 2.

Helicolimæ australisica, De Blainville.

Hab. Sydney.

A fine, large, obliquely-flattened species, of a greenish-olive colour.

Species 41. (Fig. a, b, Mus. Cuming.)

VITRINA BORNEENSIS. *Vitr. testâ depressè globosâ, tenuissimâ, aureo-corneâ, valde pellucidâ, spirâ convexâ, vix emersâ, versus apicem opaco-albâ, anfractibus declivi-convexis, subcentricosis, confertim tenuè plicato-striatis, sublux circulariter malleatis; aperturâ lunari-rotundatâ.*

THE BORNEO VITRINA. Shell depressly globose, very thin, golden horny, very transparent, spire convex, scarcely emerged, opaque-white towards the apex, whorls slopingly convex, rather ventricose, closely finely plicately striated, circularly malleated beneath; aperture lunar-rounded.

PFEIFFER, Pro. Zool. Soc. 1856, p. 324.

Hab. Borneo.

Extremely thin and transparent, finely malleated around the columellar axis, and opaque milky-white towards the apex.

Species 42. (Mus. Cuming.)

VITRINA LEUCOSPIRA. *Vitr. testâ globosâ, parum depressâ, lutescente-hyalinâ, valde pellucidâ, spirâ convexâ, vix emersâ, versus apicem opaco-albâ, anfractibus rotundatis, subcentricosis, confertim irregulariter plicato-striatis; aperturâ obliquè lunari-rotundatâ.*

THE WHITE SPIRE VITRINA. Shell globose, but little

VITRINA.—PLATE VI.

depressed, yellowish hyaline, very transparent, spire convex, scarcely emerged, opaque-white towards the apex, whorls rounded, rather ventricose, closely irregularly plicately striated; aperture obliquely lunar-
rounded.

PFEIFFER, Pro. Zool. Soc. 1856, p. 326.

Hab. Australia.

A very thin submembranaceous shell, with the apex opaque milky-white, like the preceding species from Borneo.

Species 43. (Mus. Cuming.)

VITRINA SMARAGDULUS. *Vitr. testâ depressè globosâ, auro-cornâ, subvirescente, parum nitente, spirâ convexo-planâ, anfractibus declivi-rotundatis, lævibus; aperturâ lunari-oratâ.*

THE LITTLE EMERALD VITRINA. Shell depressly globose, golden horny, somewhat greenish, but little shining, spire convexly flattened, whorls slopingly rounded, smooth; aperture lunar-ovate.

BECK, Pfeiffer, Pro. Zool. Soc. 1848, p. 104.

Hab. Island of Negros, Philippines; Cuming.

There is a faint dull-greenish hue about this species, very unlike the bright green of an emerald.

Species 44. (Mus. Cuming.)

VITRINA GUTTA. *Vitr. testâ subdepressè globosâ, albido-cornâ, subvitreâ, spirâ convexo-planâ, anfractibus brevibus, latiusculis, rotundatis, confertim tenuè plicatis; aperturâ subamplâ, lunari-rotundatâ.*

THE DROP VITRINA. Shell somewhat depressly globose, whitish horny, rather glassy, spire convexly flattened, whorls short, rather broad, rounded, closely finely plicated; aperture rather large, lunar-rounded.

PFEIFFER, Pro. Zool. Soc. 1848, p. 105.

Hab. Island of Luzon, Philippines; Cuming.

A delicate hyaline bubble-like shell, of almost glassy substance.



VITRINA.

PLATE VII.

Species 45. (Mus. Cuming.)

VITRINA ANGELICÆ. *Vitr. testâ subglobosâ, parum depressâ, virente-luteâ, subvitreâ, spirâ subprominulâ, anfractibus brevibus, rotundatis, lævibus; aperturâ lunari-rotundatâ.*

THE ANGELICA VITRINA. Shell subglobose, but little depressed, greenish-yellow, somewhat glassy, spire rather prominent, whorls short, rounded, smooth; aperture lunar-rounded.

BECK. Ind. Moll. p. 1.

Hab. Greenland.

Closely allied to the more widely-distributed European *V. pellucida*, but of rounder whorls more shortly convoluted.

Species 46. (Mus. Cuming.)

VITRINA DIAPHANA. *Vitr. testâ depressè ovalâ, subauriformi, virente-hyalinâ, spirâ minutâ, convexâ, suturâ subimpressâ, anfractibus convexis, ultimo subtilis perangusto, marginis membranaceo; aperturâ amplissimâ, fere horizontali.*

THE DIAPHANOUS VITRINA. Shell depressly ovate, somewhat ear-shaped, greenish hyaline, spire minute, convex, suture rather impressed, whorls convex, the last very narrow beneath, membranaceous at the margin; aperture very large, almost horizontal.

DRAPARNAUD, Hist. Moll. p. 120. pl. 8. f. 38. 39.

Helix virens, Studer.

Hyalina vitrea, Studer.

Helix limacina, Alten.

Helix palliata, Hartmann.

Hab. Central Europe.

The form of this species presents a marked contrast to that of the preceding.

Species 47. (Mus. Cuming.)

VITRINA SENNAARIENSIS. *Vitr. testâ depressè orbiculatâ, pellucido-cornéâ, parum nitente, spirâ parvâ, subprominulâ, anfractibus parvis, angularis, arcuatim rugosis, ad peripheriam obtusè angularis; aperturâ parvâ, obliquè lunari-rotundatâ, marginibus conniventibus.*

THE SENNAAR VITRINA. Shell depressly orbicular, trans-

parent horny, but little shining, spire small, rather prominent, whorls small, narrow, arcuately rugose, obtusely angled at the periphery; aperture small, obliquely lunar-rounded, margins approximating.

PFEIFFER, Pro. Zool. Soc. 1856, p. 325.

Hab. Sennaar, Nubia; Damard.

A distinct type of more contracted growth, obtusely keeled at the periphery.

Species 48. (Fig. a, b, Mus. Cuming.)

VITRINA STRANGEL. *Vitr. testâ depressè semiglobosâ, tenuissimâ, aureo-hyalinâ, spirâ convexâ, eie emersâ, anfractibus declivi-convexis, arcuatim tenuè plicato-striatis, sub lente minutè spiraliter lineari-impressis; aperturâ obliquè lunari-ovalâ.*

STRANGE'S VITRINA. Shell depressly semiglobose, very thin, golden hyaline, spire convex, scarcely emerged, whorls slopingly convex, arcuately finely plicately striated, beneath the lens minutely spirally linearly impressed; aperture obliquely lunar-ovate.

PFEIFFER, Pro. Zool. Soc. 1849, p. 132.

Hab. Brisbane, East Coast of New Holland; Strange.

An extremely thin bright-golden hyaline shell, exhibiting traces of minute impressed spiral lines.

Species 49. (Fig. a, b, Mus. Cuming.)

VITRINA PEPPIGII. *Vitr. testâ globosâ, lutescente-cornéâ, supra peripheriam fasciâ rufâ lineari cinctâ, anfractibus convexis, arcuatim superficialiter plicato-striatis; aperturâ lunari-rotundatâ.*

PEPPIG'S VITRINA. Shell globose, yellowish horny, encircled above the periphery with a linear red band, whorls convex, arcuately superficially plicately striated; aperture lunar-rounded.

MENKE, Pfeiffer, Symb. part 3. p. 81.

Hab. Natal.

This is a more compactly-rounded form than *V. cornea*, from the same locality, and of less transparent substance, but it is by no means clear that they are distinct species.

Species 50. (Mus. Cuming.)

VITRINA IDÆ. *Vitr. testâ depressè globosâ, lutescente*

corned, valde pellucidâ, spirâ convexâ, suturâ subimpressâ, anfractibus declivi-rotundatis, arcuatim plicato-striatis; aperturâ obliquè lunari-ovata.

IDA'S VITRINA. Shell depressly globose, yellowish horny, very transparent, spire convex, suture rather impressed, whorls slopingly rounded, arcuately plicately striated; aperture obliquely lunar-ovate.

PFEIFFER, Pro. Zool. Soc. 1856, p. 325.

Hab. Island of Celebes; Madame Ida Pfeiffer.

A light transparent species of simple character, collected at Celebes by the renowned traveller after whom it is named.

Species 51. (Mus. Cuming.)

VITRINA CELEBENSIS. *Vitr. testâ depressè orbiculari, solidulâ, castaneo-rufescente, nitidâ, spirâ breviter conoidâ, suturâ lineari, opaco-albidâ, anfractibus declivi-convexis, ad peripheriam subproductis; aperturâ parvisculâ, lunari-rotundatâ.*

THE CELEBES VITRINA. Shell depressly orbicular, rather solid, chestnut-reddish, shining, spire shortly conoid, suture linear, opaque whitish, whorls slopingly con-

vex, rather produced at the periphery; aperture rather small, lunar-rounded.

PFEIFFER, Pro. Zool. Soc. 1856, p. 325.

Hab. Island of Celebes; Madame Ida Pfeiffer.

A more solid shell, partaking very much of the form and character of *Helix*.

Species 52. (Mus. Cuming.)

VITRINA NITIDA. *Vitr. testâ depressè ovata, tenuissimâ, aureo-lutescente, valde pellucidâ, vitreâ, spirâ parvâ, convexâ, anfractibus subangustis, obscure arcuatim striatis; aperturâ subamplâ, obliquè lunari-ovata.*

THE SHINING VITRINA. Shell depressly ovate, very thin, golden-yellow, very transparent, glassy, spire small, convex, whorls rather narrow, obscurely arcuately striated; aperture rather large, obliquely lunar-ovate.

GOULD, Pro. Nat. Hist. Soc. Boston, 1846, p. 180.

Exped. Shells, p. 9. pl. 1. f. 8.

Hab. Madeira.

Remarkably bright in colour, and of the clearest transparency.





55.



57. b.



56. b.



58.



60.



62.



63



64



65 b



68.



69.

VITRINA.

PLATE IX.

Species 61. (Mus. Cuming.)

VITRINA ABYSSINICA. *Vitr. testâ depresso-ovatâ, pellucido-cornâ, spirâ parvâ, submersâ, anfractibus declivi-converxis, subventricosâ, subelongato-productis; aperturâ lunari-ovatâ.*

THE ABYSSINIAN VITRINA. Shell depressly ovate, transparent horny, spire small, scarcely emerged, whorls slopingly convex, rather ventricose, elongately produced; aperture lunar-ovate.

RUPPEL, Pfeiffer, Pro. Zool. Soc. 1848, p. 108.

Hab. Abyssinia.

A rather oblong, but still compressly ventricose species.

Species 62. (Mus. Cuming.)

VITRINA LIMPIDA. *Vitr. testâ depressâ semiglobosâ, virescente-vitrâ, spirâ parvâ, vix emersâ, suturâ linearimpressâ, anfractibus declivi-converxis; aperturâ obliquè lunari-ovatâ.*

THE CLEAR VITRINA. Shell depressly semiglobose, greenish glassy, spire small, but little emerged, suture linearly impressed, whorls slopingly convex; aperture obliquely lunar-ovate.

GOULD, Binney, Terr. Moll. U. S. vol. ii. p. 58.

Vitrina pellucida, var., Binney.

Vitrina Americana, Pfeiffer.

Hab. United States.

The shell, which we figure as a typical specimen of this United States species, is rather more obliquely convoluted than *V. pellucida*, as stated by Pfeiffer when describing it under the name *V. Americana*. But Dr. Gould argues that it is more globose in form.

Species 63. (Mus. Cuming.)

VITRINA PELLUCIDA. *Vitr. testâ depressâ subglobosâ, virescente-vitrâ, spirâ parvâ, anfractibus declivi-rotundatis; aperturâ obliquè lunari-rotundatâ.*

THE TRANSPARENT VITRINA. Shell depressly subglobose, greenish glassy, spire small, whorls slopingly rounded; aperture obliquely lunar-rounded.

Helix pellucida, Müller, Verm. Hist. vol. ii. p. 15.

Helix diaphana, Poirët.

Helicolimæx pellucida, Ferrussac.

Cobresia (Helicoides) vitrea, Alten

Vitrina pellucida, Gaertner.

Helix elliptica, Brown.

Hyalina pellucida, Studer.

Limaçina pellucida, Hartmann.

Vitrina beryllina, C. Pfeiffer.

Vitrina Mulleri, Jeffreys.

Vitrina Dillwynii, Jeffreys.

Hab. Northern and Central Europe (under stones, leaves, and moss).

The only species known in this country, and the smallest of the genus.

Species 64. (Mus. Cuming.)

VITRINA INFLATA. *Vitr. testâ orato-auriformi, lutescente-cornâ, parva nitidâ, spirâ parvâ, vix emersâ, anfractibus converxis, inflatis, tenuè arcuatim striatis; aperturâ subampliter patente oratâ.*

THE INFLATED VITRINA. Shell ovately ear-shaped, yellowish horny, but little shining, spire small, scarcely emerged, whorls convex, inflated, thinly arcuately striated; aperture rather largely openly ovate.

Hab. Sydney.

Notwithstanding the close affinity of many species of this form of *Vitrina*, I am unable to refer the present to any previously described. It has a peculiarly inflated open-mouthed character.

Species 65. (Mus. Cuming.)

VITRINA PLANOSPIRA. *Vitr. testâ oblongo-orali, posticè lateraliter compressâ, virescente-cornâ, pellucidâ, spirâ parvâ, planatâ, anfractibus subventricosâ, perobliquis, arcuatim striatis, spiraliter obscurè impresso-lineatis; aperturâ obliquè oratâ.*

THE FLAT-SPIRE VITRINA. Shell oblong-oval, posteriorly laterally compressed, greenish horny, transparent, spire small, flattened, whorls rather ventricose, very oblique, arcuately striated, spirally obscurely impresso-lineated; aperture obliquely ovate.

PFEIFFER, Zeitschr. für Malak. 1853. p. 51 (not *V. planospira*, Benson).

Hab. Salomon's Island.

Characterized by an unusually lateral compression of the convoluted portion of the shell.

Species 66. (Mus. Cuming.)

VITRINA SIGARETINA. *Vitr. testâ auriformi, depressâ, virescente-olivaceâ, subcitrâ, spirâ parvâ, minute acuminatâ, vix emersâ, anfractibus angustis, radialim plicato-rugosis; aperturâ perampliter obliquè lunari-ovatâ.*

THE SIGARETUS-LIKE VITRINA. Shell ear-shaped, depressed, greenish-olive, somewhat glassy, spire small, minutely acuminated, but little emerged, whorls narrow, radiately plicately rugose; aperture very largely obliquely lunar-ovate.

RECLUZ, *Revue Zool. Soc. Civ.* 1841, p. 70. *Mag. de Zool.* 1842, pl. 59.

Hab. Sédiau, on the banks of the Casamans River, interior of Africa; Captain Mion. Senegal.

A shining glassy species, with the convoluted portion of the shell much contracted, while the spire is minutely acuminated at the apex.

Species 67. (Mus. Cuming.)

VITRINA CEYLONICA. *Vitr. testâ depressè semiglobosâ, lutescente-olivaceâ, parum nilente, spirâ modicè emersâ, anfractibus declivi-convexis, substriatis; aperturâ lunari-ovatâ.*

THE CEYLON VITRINA. Shell depressly semiglobose, yellowish-olive, but little shining, spire moderately emerged, whorls slopingly convex, faintly striated; aperture lunar-ovate.

BECK, *Ind. Moll.* p. 2, pl. 1, f. 3.

Hab. Ceylon.

A more slopingly convex opaque shell than *V. pellucida*.

Species 68. (Mus. Cuming.)

VITRINA HYALINA. *Vitr. testâ subglobosâ, tenuissimâ, virente-hyalinâ, spirâ subexsertâ, anfractibus rotundatis, rudè plicato-striatis; aperturâ lunari-rotundatâ.*

THE HYALINE VITRINA. Shell somewhat globose, very thin, greenish hyaline, spire rather exserted, whorls round, rudely plicately striated; aperture lunar-rounded.

PFEIFFER, *Pro. Zool. Soc.* 1854, p. 296.

Hab. Moreton Bay, Australia; Strauge.

Chiefly distinguished by its rounded form and rudely puckered striae.

Species 69. (Mus. Cuming.)

VITRINA AUREA. *Vitr. testâ depressè-auriformi, pellucido-aureâ, nilente, spirâ planatâ, anfractibus perangustis, arcuatim plicato-striatis, ad peripheriam obtusè angulatis; aperturâ perobliquè angustè lunari-ovatâ.*

THE GOLDEN VITRINA. Shell depressly ear-shaped, transparent-golden, shining, spire flattened, whorls very narrow, arcuately plicately striated, obtusely angled at the periphery; aperture very obliquely narrowly lunar-ovate.

PFEIFFER, *Pro. Zool. Soc.* 1854, p. 122.

Hab. Salomon's Island.

Remarkable for its narrow compressed form, the periphery of the shell bulging into an obtuse angle.



73



74 a



74 b



75



76



77



78

VITRINA.

PLATE X.

Species 70. (Mus. Cuming.)

VITRINA AUSTRALIS. *Vitr. testâ depressissimè auriformi, basi apertâ, lutescente-corneâ, spirâ parvâ, subimmersâ, anfractibus ad suturas impressis, arcuatim subplicato-striatis, margine membranaceis.*

THE AUSTRALIAN VITRINA. Shell very depressly ear-shaped, open at the base, yellowish horny, spire small, rather immersed, whorls impressed at the sutures, faintly arcuately plicately striated, membranaceous at the edge.

PFEIFFER, MS. in Mus. Cuming.

Peltella australis, Adams.

Hab. Eastern Australia.

This, and six other species of the plate, belong to the genus *Peltella* of Webb and Van Beneden, in which only a section of the whorls is formed; the base of the shell next the animal is open or to membranaceous to be preserved.

Species 71. (Mus. Cuming.)

VITRINA APERTA. *Vitr. testâ depressissimè auriformi, basi apertâ, virescente-corneâ, spirâ minutâ, laterali, anfractibus convexiusculis, margine membranaceis.*

THE OPEN VITRINA. Shell very depressly ear-shaped, open at the base, greenish horny, spire minute, lateral, whorls slightly convex, membranaceous at the margin.

BECK, Pfeiffer, Pro. Zool. Soc. 1848, p. 107.

Peltella aperta, Adams.

Hab. Island of Luzon, Philippines; Cuming.

A small flattened horny shield, with only a small lateral convoluted nucleus.

Species 72. (Mus. Cuming.)

VITRINA DIMIDIATA. *Vitr. testâ depressissimè ovatâ, basi apertâ, lutescente-corneâ, spirâ parvâ, subplanâ, laterali, anfractibus convexiusculis, levibus, margine membranaceis.*

THE HALF VITRINA. Shell very depressly ovate, open at the base, yellowish horny, spire small, rather flat, lateral, whorls slightly convex, smooth, membranaceous at the margin.

PFEIFFER, Pro. Zool. Soc. 1852, p. 56.

Hab. New Zealand.

Of rather a more oblong-ovate form, with the convoluted nucleus of the whorls not quite so contracted.

Species 73. (Mus. Cuming.)

VITRINA LAMARCKII. *Vitr. testâ depressè ovali, membranaceo-corneâ, parvâ nitente, spirâ planiusculâ, anfractibus convexis, levibus, vix striatis; apertura per amplâ, subhorizontali.*

LAMARCK'S VITRINA. Shell depressly oval, membranaceous horny, but little shining, spire rather flat, whorls convex, smooth, scarcely striated; aperture very large, almost horizontal.

Helicolimæ Lamarckii, Férussac, Prod. p. 21. Hist. pl. 9. f. 9.

Vitrua Lamarckii, Gray.

Vitrua Teneriffæ, Quoy and Gaimard.

Vitrua Cuvieri, Sowerby.

Hab. Canary Islands.

This species is somewhat intermediate in its characters between the typical forms of *Vitrua* proper and *Peltella*. The basal reflected edge of the shell is narrow and partially membranaceous.

Species 74. (Fig. a, b, Mus. Cuming.)

VITRINA ALBO-PUNCTATA. *Vitr. testâ ovali, albido-corneâ, basi apertâ, spirâ parvâ, subobscurâ, anfractibus subventricosis, arcuatim striatis, rugis linearibus impressis minutè spirāliter decussatis.*

THE WHITE-DOTTED VITRINA. Shell ovate, whitish horny, open at the base, spire small, rather obscure, whorls somewhat ventricose, arcuately striated, minutely spirally decussated with impressed linear wrinkles.

Geotix albo-punctata, Shuttleworth, MS. in Mus. Cuming.

Hab. Humacao, Porto Rico.

A distinct *Bulla*-like form of the *Peltella* section of the genus, in which the shell has a decussated surface. The name "white-dotted" refers to the animal.

Species 75. (Mus. Cuming.)

VITRINA FLAVO-LINEATA. *Vitr. testâ depressè ovali, albido-corneâ, basi plus minus apertâ, spirâ minutâ, planâ, obscurâ, anfractibus subventricosis, decussatim striatis, margine membranaceis.*

THE YELLOW-LINED VITRINA. Shell depressly ovate, whitish horny, more or less open at the base, spire minute, flat, obscure, whorls rather ventricose, decussately striated, membranaceous at the edge.

Gæolis flavo-lineata, Shuttleworth, MS. in Mus. Cuming.
Hab. Luquello, Porto Rico.

Very closely allied to the preceding species. The difference in the development of the columellar margin arises, probably, from the membranaceous edge breaking away in extracting the animal. The specific name indicates a difference in the colouring of the animal.

Species 76. (Mus. Cuming.)

VITRINA NIGRO-LINEATA. *Vitr. testâ depressissimè auriformi, tenuissimâ, hyalinâ, basi apertâ, spirâ minutâ, submersâ, anfractibus convexis, decussatim striatis, margine membranaceis.*

THE BLACK-LINED VITRINA. Shell very depressly ear-shaped, very thin, hyaline, open at the base, spire minute, a little emerged, whorls convex, decussately striated, membranaceous at the margin.

Gæolis nigro-lineata, Shuttleworth, MS. in Mus. Cuming.
Hab. Luquello, Porto Rico.

The name of this species, as of the two preceding, refers to the colouring of the animal, and in each instance the arcuating lines of growth of the shell are decussated by finely impressed spiral lines.

Species 77. (Mus. Cuming.)

VITRINA RUIVENSIS. *Vitr. testâ depressè ovalâ, subauri-*

formi, olivaceo-corneâ, nitente, basi fere apertâ, spirâ parvâ, vix emersâ, anfractibus convexis, subventricosâ, spiraliter subobsoletè impresso-striatis, margine membranaceis.

THE RUIVO VITRINA. Shell depressly ovate, somewhat ear-shaped, olive-horny, shining, almost open at the base, spire small, scarcely emerged, whorls convex, rather ventricose, spirally obsolete impressly striated, membranaceous at the edge.

COURTHOY, Gould, Exped. Shells, p. 26.

Hab. Pico de Ruivo, Madeira.

This interesting shell has traces of the spiral impressed striae noticed in the three preceding species, but it is of a different form, more membranaceous, and of a bright transparent olive colour.

Species 78. (Mus. Cuming.)

VITRINA MEMBRANACEA. *Vitr. testâ depressè orbiculari, virente-olivaceâ, membranaceâ, parum nitente, spirâ planâ, suturâ impressâ, anfractibus convexis, irregulariter arcuatum striatis; aperturâ lunari-ovalâ.*

THE MEMBRANACEOUS VITRINA. Shell depressly orbicular, greenish-olive, membranaceous, but little shining, spire flat, suture impressed, whorls convex, irregularly arcuately striated; aperture lunar-ovate.

BENSON, Ann. and Mag. Nat. Hist., Second Series, vol. xii. p. 93.

Hab. Baladua, Ceylon.

This is not a species of the *Peltella* section, but an ordinary form of the genus.

VITRINA.

	Plate.	Species		
<i>Abyssinica</i> , Rüppell	IX.	61	<i>leucospira</i> , Pfeiffer	VI.
<i>albo-punctata</i> (<i>Gæolis</i>), Shuttl. . .	X.	74	<i>leytensis</i> , Pfeiffer	IV.
<i>Americana</i> , Pfeiffer	IX.	62	<i>limpida</i> , Gould	IX.
<i>Angelica</i> , Beck	VII.	45	<i>Luzonica</i> , Pfeiffer	VI.
<i>aperta</i> , Beck	X.	71	<i>magnifica</i> , Reece	III.
<i>aurea</i> , Pfeiffer	IX.	69	<i>major</i> (<i>Helicolimax</i>), Férussac .	VIII.
<i>Australasica</i> (<i>Helicolimax</i>), Blainv.	VI.	40	<i>margarita</i> , Beck	V.
<i>australis</i> , Pfeiffer	X.	70	<i>membranacea</i> , Benson	X.
<i>Beckiana</i> , Pfeiffer	IV.	22	<i>Milligani</i> , Pfeiffer	III.
<i>Bensoni</i> , Pfeiffer	II.	9	<i>monticola</i> , Benson	II.
<i>beryllina</i> , C. Pfeiffer	IX.	63	<i>Mülleri</i> , Jeffreys	IX.
<i>brevis</i> , Gray	VIII.	53	<i>Natalensis</i> , Krauss	I.
<i>bicolor</i> , Beck	IV.	28	<i>nigro-lineata</i> (<i>Gæolis</i>), Shuttl. .	X.
<i>Birmanica</i> , Philippi	VIII.	59	<i>nitida</i> , Gould	VII.
<i>Borneensis</i> , Pfeiffer	VI.	41	<i>nicalis</i> , Charpentier	VIII.
<i>cassida</i> (<i>Helicorion</i>), Hutton . . .	II.	10	<i>Pappigii</i> , Menke	VII.
<i>castanea</i> , Pfeiffer	VI.	37	<i>papillata</i> , Pfeiffer	V.
<i>Celebensis</i> , Pfeiffer	VII.	51	<i>pellicula</i> (<i>Helicolimax</i>), Férussac	VIII.
<i>Ceylanica</i> , Beck	IX.	67	<i>pellucida</i> , Draparnaud	VIII.
<i>cornua</i> , Pfeiffer	IV.	24	<i>pellucida</i> (<i>Helix</i>), Müller . . .	IX.
<i>crenularis</i> , Beck	IV.	26	<i>planospira</i> , Benson	II.
<i>Cunningii</i> , Beck	III.	19	<i>planospira</i> , Pfeiffer	IX.
<i>Cuvieri</i> (<i>Helixarion</i>), Férussac . .	III.	15	<i>planulata</i> , Pfeiffer	V.
<i>Cuvieri</i> , Sowerby	X.	73	<i>Plauti</i> , Pfeiffer	VIII.
<i>Darnaudi</i> , Pfeiffer	V.	32	<i>politissima</i> , Beck	V.
<i>diaphana</i> , Draparnaud	VII.	46	<i>prestans</i> , Gould	II.
<i>Diltheyni</i> , Jeffreys	IX.	63	<i>Pyrenæica</i> , Férussac	VIII.
<i>dimidiata</i> , Pfeiffer	X.	72	<i>resiliens</i> , Beck	IV.
<i>Draparnaldi</i> , Cuvier	VIII.	60	<i>rufescens</i> , Pfeiffer	V.
<i>flavo-lineata</i> (<i>Gæolis</i>), Shuttl. . .	X.	75	<i>ruivensis</i> (<i>Courthony</i>)	X.
<i>Flemingi</i> , Pfeiffer	I.	4	<i>Rüppelliana</i> , Pfeiffer	III.
<i>Freycineti</i> , Férussac	VI.	40	<i>Salus</i> , Benson	II.
<i>gigas</i> , Benson	I.	3	<i>scutella</i> , Benson	II.
<i>grandis</i> , Pfeiffer	V.	33	<i>semilimax</i> , Férussac	VIII.
<i>Gruneri</i> , Pfeiffer	VI.	38	<i>Semaariensis</i> , Pfeiffer	VII.
<i>Guimarasensis</i> , Beck	V.	35	<i>Siamensis</i> , Haines	III.
<i>gutta</i> , Pfeiffer	VI.	44	<i>Sigaretina</i> , Recluz	IX.
<i>hians</i> , Pfeiffer	I.	6	<i>snaragdulus</i> , Beck	VI.
<i>heliciformis</i> , Pfeiffer	IV.	25	<i>Sowerbiana</i> , Pfeiffer	I.
<i>hyalina</i> , Pfeiffer	IX.	68	<i>Strangei</i> , Pfeiffer	VII.
<i>Idæ</i> , Pfeiffer	VII.	50	<i>succinea</i> , Reece	II.
<i>inflata</i> , Reece	IX.	64	<i>Teneriffe</i> , Quoy and Gaimard . .	X.
<i>irradians</i> , Pfeiffer	I.	5	<i>Verreauxi</i> , Pfeiffer	IV.
<i>Keppelli</i> , Pfeiffer	VIII.	58	<i>virens</i> , Pfeiffer	III.
<i>Lamarckii</i> (<i>Helicolimax</i>), Férussac	X.	73		

MONOGRAPH
OF THE GENUS
S I M P U L O P S I S .

"One of the most fundamental divisions in geographical distribution is that between the Old World and the New."—*Darwin*.



4a.



5a.



5b.



4b.



6a.



6b.



7.

SIMPULOPSIS.

PLATE I.

Genus SIMPULOPSIS, Beck.

Testa conico-globosa vel Neriteformis, tenuis, membranacea, parum nitens, spirā nunc parvā, laterali, nunc prominulā, anfractibus ventricosis, plerumque obliquè plicato-corrugatis; aperturā plus minus obliquā, interdum perampliter patente.

Shell conically globose or Nerite-shaped, thin membranaceous, but little shining, spire sometimes small, lateral, sometimes rather prominent, whorls ventricose, generally obliquely plicately wrinkled; aperture more or less oblique, sometimes very largely open.

An interesting group of shells is here brought together in two plates under the name *Simpulopsis*, as originally proposed by Dr. Beck, and adopted in the last volume of his monograph by Pfeiffer. They partake of the characters of *Succinea* and *Vitrina*, inhabiting Mexico and Brazil, where *Vitrina* is not known. The shell in its typical form is plicately wrinkled throughout, and globosely inflated, sufficiently capacious to allow of the animal retiring into it. It is more nearly allied, therefore, to *Succinea* than to *Vitrina*.

One of the species, a true *Simpulopsis*, is recorded as a native of Salomon's Island.

Species 1. (Mus. Cuming.)

SIMPULOPSIS CHIAPENSIS. *Simp. testā depressè globosā, olivacea-cornēā, spirā parvā, parum prominulā, anfractibus obliquè convexis, confertim minutè striatis; aperturā diagonali, lunato-circulari.*

THE CHIAPA SIMPULOPSIS. Shell depressly globose, olive-horny, spire small, but little prominent, whorls obliquely convex, closely minutely striated; aperture diagonal, lunar-circular.

PFEIFFER, Pro. Zool. Soc. 1856, p. 377.

Hab. Chiapa, Mexico.

Not a very characteristic species, partaking as much of *Vitrina* as of *Simpulopsis*.

Species 2. (Mus. Cuming.)

SIMPULOPSIS DECUSSATA. *Simp. testā conico-globosā, tenuissimā, aeneo-cornēā, valdè pellucidā, spirā subprominulā, anfractibus declivi-ventricosis, costellis obliquis*

et spiralibus undique subtilissimè decussatis; aperturā obliquè ovatā.

THE DECUSSATED SIMPULOPSIS. Shell conically globose, very thin, bronze-horny, very transparent, spire rather prominent, whorls slopingly ventricose, very finely decussated, with slender oblique and spiral ribs; aperture obliquely ovate.

PFEIFFER, Malak. Bl. 1856, p. 260.

Hab. Petropolis, Rio Janeiro; Miers.

A shell of remarkably transparent tenuity, yet preserving the utmost symmetry in its convolution.

Species 3. (Mus. Cuming.)

SIMPULOPSIS RUTO-VIRENS. *Simp. testā globoso-ovatā, viresecente-cornēā, spirā parvā, anfractibus convexis, obliquè confertim irregulariter plicato-corrugatis, aperturā ovatā, perobliquā.*

THE RED-GREEN SIMPULOPSIS. Shell globosely ovate, greenish-horny, spire small, whorls convex, obliquely closely irregularly plicately wrinkled; aperture ovate, very oblique.

Succinea rufo-virens, Moricand, Mém. Soc. Phys. Genève, 3rd Supp. p. 53, pl. 5, f. 4.

Vitrina rufo-virens, Pfeiffer.

Simpulopsis rufo-virens, Pfeiffer.

Hab. Bahia, Brazil.

There is no decussating spiral sculpture in this species as in the last; the surface is thick-set throughout with irregular oblique wrinkles.

Species 4. (Fig. a, b, Mus. Cuming.)

SIMPULOPSIS MIERSI. *Simp. testā conico-globosā, tenuissimā, virente-olivaceā, auro-cornēā, spirā brevī, apice acutā, anfractibus convexis, ampliter inflatis, undique modicè obliquè plicato-corrugatis; aperturā perobliquā, subpyriformi-ovatā.*

MIER'S SIMPULOPSIS. Shell conically globose, very thin, greenish-olive, bronze-horny, spire short, sharp at the apex, whorls convex, largely inflated, everywhere moderately obliquely plicately wrinkled; aperture very oblique, somewhat pyriformly ovate.

PFEIFFER, Malak. Bl. 1856, p. 260.

Hab. Espirito Santo, Brazil; Miers.

This fine species, named in honour of its discoverer, Mr. Miers, the well-known naturalist and traveller in Brazil, may be regarded as the type of the genus.

Species 5. (Fig. *a, b*, Mus. Cuming.)

SIMPULOPSIS CUMINGII. *Simp. testâ obliquè oblongâ, Neriteformi, tenuè membranaceâ, olivaceâ, spirâ parvâ, laterali, vix emersâ, anfractibus convexis, rudè irregulariter plicatis et malleatis; aperturâ perobliquâ, lunari-ovata.*

CUMING'S SIMPULOPSIS. Shell obliquely oblong, Nerite-shaped, thinly membranaceous, olive, spire small, lateral, scarcely emerged, whorls convex, rudely irregularly plicated and malleated; aperture very oblique, lunar-ovate.

PFEIFFER, *Proc. Zool. Soc.* 1861, p. 27, pl. 3. f. 2.

Hab. Mexico.

Chiefly distinguished by its very oblique Nerite-like form; the substance of the shell being thoroughly membranaceous.

Species 6. (Fig. *a, b*, Mus. Cuming.)

SIMPULOPSIS PORTORICENSIS. *Simp. testâ perobliquè ovali, tenuissimâ, flavicante-corneâ, spirâ conoideâ, modicè emersâ, anfractibus declivi-convexis, obliquè confertim rudè striatis; aperturâ oblongo-ovali.*

THE PORTO RICO SIMPULOPSIS. Shell very obliquely oval, very thin, pale yellowish-horny, spire conoid, moderately emerged, whorls slopingly convex, obliquely closely rudely striated; aperture oblong-oval. SHUTTLEWORTH, *Diagn. Moll.* No. 6, p. 147.

Hab. Sierra de Luquillo, Porto Rico; Blumer.

An extremely thin and delicately-tinted shell, very obliquely convoluted.

Species 7. (Mus. Cuming.)

SIMPULOPSIS ENEA. *Simp. testâ obliquè ovali, auro-corneâ, spirâ parvâ, apice acutâ, anfractibus convexis, striis obliquis filiformibus minutis lincisque spiralibus impressis obscure decussatis; aperturâ lunari-ovalâ.*

THE BRONZE SIMPULOPSIS. Shell obliquely ovate, bronze-horny, spire small, sharp at the apex, whorls convex, obscurely decussated with oblique minute thread-like striae and spiral impressed lines; aperture lunar-ovate.

PFEIFFER, *Proc. Zool. Soc.* 1861, p. 27.

Hab. Parada, Mexico; Salle.

The sculpture of this species, which is scarcely visible to the naked eye, is composed of minute thread-like striae running obliquely, crossed by faintly-impressed lines running spirally.



10.



11a



12 b



11b



13 a



13. b.



14.

SIMPULOPSIS.

PLATE II.

Species 8. (Mus. Cuming.)

SIMPULOPSIS SALOMONIA. *Simp. testā conico-globosā, tenuissimā, fusco-olivaceā, spirā subacutā, anfractibus rotundatis, inflatis, oblique dense plicato-corrugatis; aperturā lunari-rotundatā.*

THE SALOMON SIMPULOPSIS. Shell conically globose, very thin, dark olive, spire rather sharp, whorls rounded, inflated, obliquely densely plicately wrinkled; aperture lunar-rounded.

Vitrina Salomonina, Pfeiffer, Zeitschr. für Malak. 1853, p. 51.

Simpulopsis Salomonina, Pfeiffer.

Hab. Salomon Island.

Of very regular conical growth, darker in colour than the Brazilian species.

Species 9. (Mus. Cuming.)

SIMPULOPSIS SALLEANA. *Simp. testā transversē ovatā, depressā, solidiusculā, flavicante-corneā, spirā minutā, laterali, anfractibus convexis, arcuatis multistriatis; aperturā perampliter patente.*

SALLÉ'S SIMPULOPSIS. Shell transversely ovate, depressed, rather solid, yellowish horny, spire minute, lateral, whorls convex, arcuately many-striated; aperture very largely open.

PFEIFFER, Pro. Zool. Soc. 1856, p. 319.

Hab. Cordova, Vera Cruz, Mexico; Sallé.

A shell of rather solid growth, with the convoluted portion very much contracted.

Species 10. (Mus. Cuming.)

SIMPULOPSIS CORDOVANA. *Simp. testā transversē ovatā, depressā, tenuissimā, membranaceā, valde pellucidā, spirā parvā, laterali, subimmersā, anfractibus convexis, confertim subobtusē plicato-striatis; aperturā perampliter patente.*

THE CORDOVA SIMPULOPSIS. Shell transversely ovate, depressed, very thin, membranaceous, very transparent, spire small, lateral, somewhat immersed, whorls convex, closely rather obtusely plicately striated; aperture very largely open.

PFEIFFER, Pro. Zool. Soc. 1856, p. 319.

Hab. Cordova, Vera Cruz, Mexico; Sallé.

A much lighter and more membranaceous species than the preceding, from the same locality, with the spire a little immersed.

Species 11. (Fig. *a, b*, Mus. Cuming.)

SIMPULOPSIS COMORENSIS. *Simp. testā ovato-globosā, olivaceā, punctis et strigis luteis variegatā, spirā convexā, parum exsertā, anfractibus ventricosē rotundatis, oblique rugoso-striatis; aperturā subobliquā, lunari-ovalī.*

THE COMORO SIMPULOPSIS. Shell ovately globose, olive, variegated with yellow dots and streaks, spire convex, but little exerted, whorls ventricosely rounded, obliquely rugosely striated; aperture rather diagonal, lunar-oval.

Vitrina Comorensis, Pfeiffer, Pro. Zool. Soc. 1856, p. 325.

Hab. Island of Mahotta, Comoros; Cloué.

Curiously like an immature specimen of the European *Helix aperta* in general aspect.

Species 12. (Fig. *a, b*, Mus. Cuming.)

SIMPULOPSIS ATROVIRENS. *Simp. testā transversē ovatā, Neriteformi, tenuissimā, membranaceā, atro-virentē, parum nitentē, spirā parvā, laterali, anfractibus convexis, radiatim rugoso-plicatis; aperturā perobliquā, lunari-ovalī.*

THE DARK-GREEN SIMPULOPSIS. Shell transversely ovate, Nerite-shaped, very thin, membranaceous, dark-green, but little shining, spire small, lateral, whorls convex, radiately rugosely plicated; aperture very oblique, lunar-ovate.

Succinea atrovirens, Moricand, Mém. Soc. Phys. Genève, vol. vii. p. 416, pl. 2, f. 1.

Simpulopsis atrovirens, Beck.

Vitrina atrovirens, Pfeiffer.

Hab. Bahia, Brazil.

A dull dark-green Nerite-shaped shell, extremely thin and membranaceous.

Species 13. (Fig. *a, b*, Mus. Cuming.)

SIMPULOPSIS SULCULOSA. *Simp. testā conico-globosā,*

tenui, membranacea, rufescente-cornea, spirā convexā, anfractibus obliquè plicato-corrugatis, supernè declivibus, versus basin subventricosis; aperturā obliquā, lunari-ovatā.

THE GROOVED SIMPULOPSIS. Shell conically globose, thin, membranaceous, reddish horny, spire convex, whorls obliquely plicately wrinkled, sloping round the upper part, rather ventricose towards the base; aperture oblique, lunar-ovate.

Helix (Cochlohydra) sulculosa, Férussac, Prod. p. 14. Hist. p. 11A. f. 6.

Succinea sulculosa, Gray.

Succinea membranacea, Michaud.

Simpulopsis sulculosa, Beck.

Vitrina sulculosa, Férussac.

Hab. Brazil.

This species, described by the elder Férussac, appears to have been the first known of the genus. It is of precisely the same typical character as the large *S. Miersi* of the same locality.

Species 14. (Mus. Cuning.)

SIMPULOPSIS OBTUSA. *Simp. testā transversē, oratā, Neritiformi, tenuissimā, flavicante-corneā, valdè pellucidā, subvitreā, spirā parvā, laterali, anfractibus convexis, obliquè valdè creberrimè plicato-corrugatis; aperturā perobliquā, lunari-ovatā.* • •

THE OBTUSE SIMPULOPSIS. Shell transversely ovate, Nerite-shaped, very thin, pale yellowish-horny, very transparent, almost glassy, spire small, lateral, whorl-convex, obliquely strongly very closely plicately wrinkled; aperture very oblique, lunar-ovate.

Succinea obtusa, Sowerby, Genera of Shells, No. 9.

Helix (Cochlohydra) obtusa, Férussac.

Helix Brasiliensis, Moricand.

Simpulopsis obtusa, Beck.

Vitrina obtusa, Pfeiffer.

Vitrina Brasiliensis, Pfeiffer.

Hab. Bahia, Brazil.

Notwithstanding this shell is so exceedingly thin and transparent, it is strongly plicately wrinkled throughout.

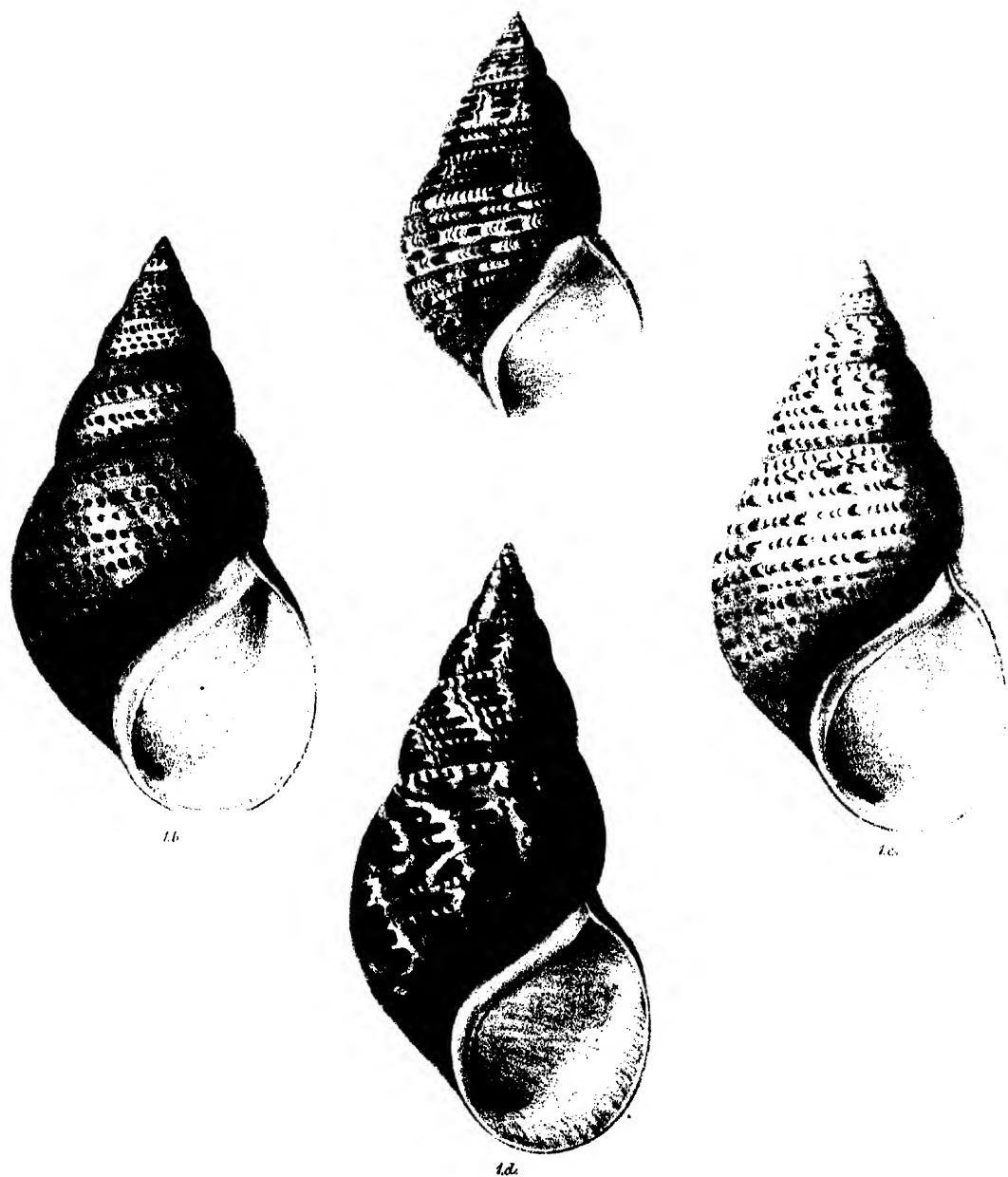
MONOGRAPH

OF THE GENUS

P H A S I A · N E L L A.

“Omnes res creatae sunt divinae sapientiae et potentiae testes, di-
vitiae felicitatis humanae.” · *Linnaeus.*





PHASIANELLA.

PLATE I.

Genus PHASIANELLA, Lamarck.

Testa oblongo-conica, variè rividè colorata, porcellanea, nitens, anfractibus quinque ad septem, convexis, aperturâ ovalâ, fauce albâ, labro simplici, columellâ arcuatâ, albâ, plus minusve callosâ.

Shell oblong-conical, variously brightly coloured, porcelain, shining, whorls five to seven, convex; aperture ovate, interior white, columella arched, white, more or less callous.

Zoologically *Phasianella* is allied to *Turritella*, the animal being furnished with a fringed collar, but more largely developed, while the foot has three pairs of digitated processes. It has been well figured by MM. Quoy and Gaimard in the Mollusca of the 'Voyage de l'Astrolabe.' The shell, unlike that of *Turritella*, is composed of not more than from five to seven whorls, and is never sculptured. The surface is always smooth and shining, with the texture very much of the appearance of painted porcelain. The operculum is solid and calcareous.

There is so little variation of form in the shell of *Phasianella*, and so great a variation of colour, that it has been almost hopeless to attempt to identify many of the named species. Who can pretend to decide the species indicated by the *Helix solida* of Born, illustrated by a worn discoloured specimen, or the *Phasianella Lehmanni*, *Preissii*, and *brevis* of Menke, with no illustrations at all? Lamarck's *P. rubens* and *variegata* and Dr. Gray's *P. brevis* have also eluded my endeavours to identify them.

The *Phasianellæ* are peculiarly Australian, living abundantly at Swan River, Adelaide, and Kangaroo Island, and producing the most lovely painted shell that the most ardent connoisseur could desire. Smaller species have also been collected at Ceylon and the Philippine Islands, Natal and Zanzibar. But the most curious feature in the geographical distribution of the *Phasianellæ* is the presence, in great numbers, of a species, *P. Vieuzii*, in the Mediterranean, and one, *P. pullus*, in our own seas, which appears again in the West Indies and at the Cape of Good Hope.

lævigatâ, porcellaneâ, politâ, carneo-albidâ vel aurantiâ, rufa et purpureo-olivaceo variè longitudinaliter nebulosâ et transversim articulatâ, spirâ subpyramidaliter exsertâ, anfractibus septem ad octo, supernè decliviter impressis, deinde cito convexis; aperturâ subpyriformioratâ, fauce albâ, labro simplici, columellâ sæpe callosâ.

THE SOUTHERN PHASIANELLA. Shell oblong conical, smooth, porcelain, polished, flesh-white or orange, variously longitudinally clouded and transversely articulated with red and purple-olive, spire somewhat pyramidally exserted, whorls seven to eight, slopingly impressed round the upper part, then suddenly convex; aperture rather pyriformly ovate, interior white, lip simple, columella often callous.

Buccinum australe, Gmelin, Linn. Syst. Nat. p. 3190.

Phasianella balinoides, Lamarck.

Phasianella varia, Enc. Méth.

Phasianella picta, De Blainville.

Phasianella australis, Deshayes.

Hab. Kangaroo Island, Australia.

Of this very beautiful and well-known species we have figured seven specimens, illustrative of its varieties of painting. Fig. 1 *a* represents the typical and most common state of *P. australis*. It is clouded longitudinally in a festooned manner, with purple-olive, and banded transversely with the same colour of a paler hue. The interspaces between the bands are white, articulated throughout with great regularity, by curved red lines. In Fig. 1 *b* the shell is a rich orange-drab, encircled with rather distant bands of darker and more blotchy articulations, with a similar band, much more faintly indicated, between them. The painting of Fig. 1 *c* consists of pale articulated bands, but the articulations are crimson-lake, forming distinct arrow-headed blotches at intervals. Fig. 1 *d* has the longitudinally festooned cloudings unusually strongly painted, with the articulated bands more broken up. The two last-mentioned specimens belonged to an enthusiastic collector of the old school, formerly residing at Chelsea. The story goes, that on hearing of their arrival in some vessel at Liverpool, he took a chaise and four, and posted after them. He secured his purchase, but by the time he reached home the two shells cost him £76.

Species 1. (Pl. I. Fig. 1 *a, b, c, d*, and Pl. II. Fig. *e, f, g*, Mus. Cuming.)

PHASIANELLA AUSTRALIS. *Phas. testâ oblongo-conicâ,*



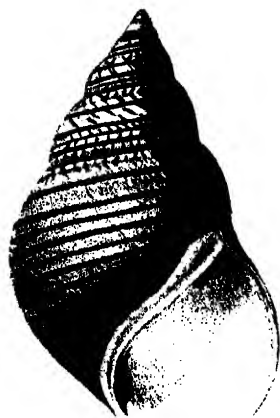
1c



2a



2b



1e



2d



PHASIANELLA.

PLATE II.

Species 1. (Fig. *e, f, g*, Mus. Cuming.)

The three varieties of *Phasianella australis* given in this plate differ materially from those in the last. In Fig. 1 *e*, the shell is encircled with unarticulated rose-red lines, the interspaces being irregularly obliquely tessellated with paler lines of the same colour. The colours of the shell in this genus are deepest and brightest in the early whorls; as the shell matures, they become weaker and fainter. Fig. 1 *f* is closer rose-banded on an olive ground, with only very faint longitudinal articulations in the sutures. In Fig. 1 *g*, the rose bands are replaced by exceedingly faint rose articulations, less defined in pattern as the shell matures.

Species 2. (Fig. *a, b, c, d*, Mus. Cuming.)

PHASIANELLA VENUSTA. *Phas. testā oblongo-conicā, tenuiculā, lævigatā, porcellaneā, politā, virescente-albā, maculis olivaceo-rufis aut purpureo-brunneis subquadratis, interdum intersectis, cingulatā, spirā subpyramidalī-exsertā, anfractibus septem ad octo, supernè æ-*

clivi-impressis, deinde cito convexis; aperturā subpyriformi-ovalā, fance albā, labro simplici.

THE HANDSOME PHASIANELLA. Shell oblong-conical, rather thin, smooth, porcelain, polished, greenish-white, encircled with square olive-red or purple-brown blotches, which are sometimes intersected, spire somewhat pyramidally exerted, whorls seven to eight, slopingly impressed round the upper part, then quickly convex; aperture rather pyriformly ovate, interior white, lip simple.

REEVE, Elem. Conch. vol. i. p. 132. pl. 12. f. 58.

Hab. Kangaroo Island, Australia.

I figured this variety of *Phasianella* some years ago in my 'Elements of Conchology,' under an impression that it might be fairly distinguished from the numerous varieties of *P. australis*; and I still find, on an examination of further specimens, that its characters are to be defined. The shell is of lighter substance, and the painting is disposed in bands of square tessellated blotches, without any indication of transverse articulations or longitudinal festoons. Towards the base, the blotches are intersected by an additional linear white band.

May, 1862.



3b.



3c.



5b.



5c.



4a.



4b.



PHASIANELLA.

PLATE III.

Species 3. (Fig. *a, b, c*, Mus. Cuming.)

PHASIANELLA SANGUINEA. *Phas. testā conico-turbinatā, solidiusculā, sanguineo-rufā, minutē undato-lineatā, fasciis pallidis fusco-fulguratis et minutē articulatis carie cingulatā, spirā subobtusā, suturā impressā, anfractibus quinque, turgidiusculis, rotundatis; apertura circulari-ovatā, fauce albā, columellā subcallosā.*

THE BLOOD-RED PHASIANELLA. Shell conically turbinated, rather solid, blood-red, minutely wave-lineated, variously encircled with pale bands, which are lightning-marked and articulated with brown, spire rather obtuse, suture impressed, whorls five, rather swollen, rounded; aperture circular-ovate, interior white, columella rather callous.

Hab. Swan River.

A very characteristic species of solid growth, composed of only five whorls, which are rounded, and rather constricted at the sutures. The painted is a deep bright blood-red, encircled with pale bands, articulated transversely with rows of minute arrow-headed brown spots, while longitudinally they are crossed in an oblique direction by bold zigzag stripes of the same colour.

Species 4. (Mus. Cuming.)

PHASIANELLA ZEBRA. *Phas. testā oblongo-conicā, solidiusculā, castaneo-rufa et flavido carneo-lineato oblique longitudinaliter conspicuē latifasciatā, anfractibus quinque supernē subdeclivibus, deinde convexis; apertura ovatā, parviusculā, fauce albā, columellā callosā.*

THE ZEBRA PHASIANELLA. Shell oblong-conical, rather solid, obliquely longitudinally conspicuously broadly banded with chestnut-red, and yellow lined with flesh-colour; whorls five, rather sloping at the upper part, then convex; aperture ovate, rather small, interior white, columella callous.

GRAY, MS. in Mus. Brit.

Hab. Swan River, Australia.

The bold longitudinally-banded colouring of this species appears to be a specific character. The pale-yellowish interspaces are crossed longitudinally, but in a contrary oblique direction, with close-set pencil lines of flesh-red, which stop short of the dark band sufficiently to give it a light edging.

Species 5. (Fig. *a, b*, Mus. Cuming.)

PHASIANELLA VENOSA. *Phas. testā ovato-turbinatā, solidā, pallidē spadiceo-fuscescente, lineis undatis rufis plus minus densē longitudinaliter venatā, anfractibus quinque, supernē subdeclivibus, deinde convexis, ultimo suboblongo; apertura ovatā, fauce albā.*

THE VEINED PHASIANELLA. Shell ovately turbinated, solid, light fawn-brown, more or less densely longitudinally veined with waved red lines, whorls five, rather sloping at the upper part, then convex, last whorl rather oblong; aperture ovate, interior white.

Hab. Swan River, Australia.

A very different species from the well-known type of the genus. The shell is more solid, and it is composed of fewer whorls, the last being obviously more oblong. The colour is equally peculiar. There are no transverse articulations; the painting consists of a crowded venation of irregular longitudinally-waved red lines.

Species 6. (Fig. *a, b*, Mus. Cuming.)

PHASIANELLA VENTRICOSA. *Phas. testā ovato-conicā, solidiusculā, pallidē carneā, fuscescente-rufa nudique minutē spiraliter articulatā, et infra suturas nebuloso-fasciatā, anfractibus quinque, supernē subdeclivibus, deinde convexis; apertura ovatā, fauce albā, columellā callosā.*

THE VENTRICOSE PHASIANELLA. Shell ovately conical, rather solid, pale flesh-colour, minutely spirally articulated throughout with brownish-red, and clouded in a banded manner beneath the sutures with the same colour, whorls five, rather sloping round the upper part, then convex; aperture ovate, interior white, columella callous.

QUOY and GAIMARD, Voy. de l'Astrol. Zool. pl. 59. f. 8, 9.

Hab. Swan River, Australia.

The clouded brown-red bands, which generally form festoons and broad streaks beneath the sutures in this species, are deeper-red towards the apex, and on the last whorls more obscure and lengthened.

PHASIANELLA.—PLATE III.

Species 7. (Mus. Cuming.)

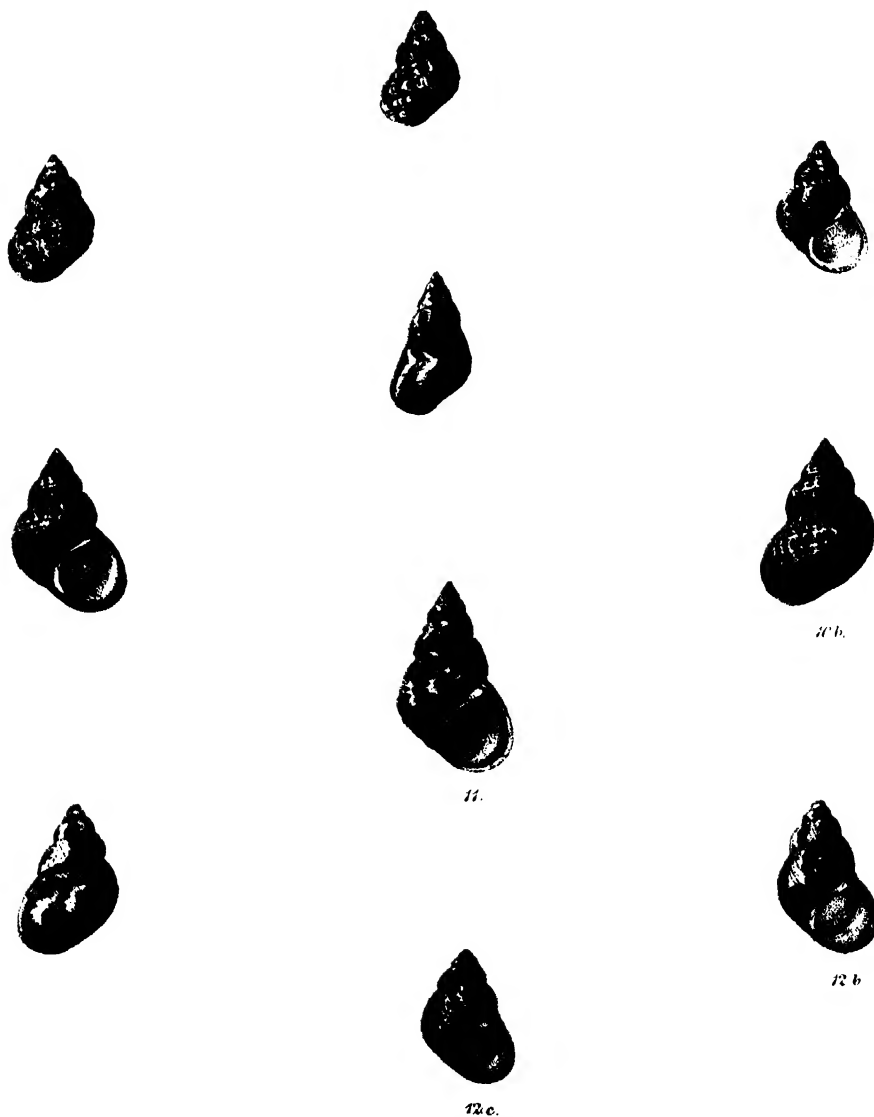
PHASIANELLA RETICULATA. *Phas. testâ globoso-conicâ, lineis fuscis undique longitudinaliter creberrimè undulato-pictâ, flammis carneis infra suturas, spirâ brevi, anfractibus quatuor ad quinque, rotundatis; aperturâ ovatâ, fauce albâ, columellâ callosâ.*

THE RETICULATED PHASIANELLA. Shell globosely conical, very closely undulately painted throughout

with brown lines and with flesh-tinted flames beneath the suture, spire short, whorls four to five, rounded, aperture ovate, interior white, columella callous.

Hab. Swan River.

I cannot trace this shell into either of the preceding species. Without regarding its shortly convoluted globosely form, there is a marked peculiarity in the painting.



PHASIANELLA

PLATE IV.

- Species 8. (Fig. a, b, c, Mu. Cuming.)

PHASIANELLA NIVOSA. *Phas. testâ ovato-conicâ, carneo-cinereâ, nigro spiraliter articulatâ et infra suturas flammâtâ, lineis subtilibus albis undique regulariter cinctâ, anfractibus superne subdeclivibus, deinde convexis; aperturâ parvisculâ, fauce cœrulescente-albâ, columellâ callositate superne munitâ.*

THE SNOW-DOTTED PHASIANELLA. Shell ovately conical, flesh-tinted ash colour, spirally articulated and flamed beneath the sutures with black, regularly encircled throughout with fine white lines; whorls rather sloping round the upper part, then convex; aperture rather small, blue-white within, columella furnished at the upper part with a callosity.

Hab. Ceylon; E. L. Layard. Island of Mindanao, Philippines; Cuming.

A very characteristic species, quite distinct from any of the Australian varieties, collected at Ceylon by Mr. Layard, and at the Philippine Islands by Mr. Cuming. The general tone of its colour is a bright ash-grey, but it is very elaborately articulated with black, with a frill of short black flames, emerging from the sutures; and the colouring of the surface is very finely marked throughout with very finely-pencilled lines of snowy white.

Species 9. (Mus. Cuming.)

PHASIANELLA FULGURATA. *Phas. testâ acuminato-conicâ, roseo-fuscâ, hic illic fere nigricante, flammis grandibus lutescentibus longitudinaliter fulguratâ, lineis albidis subtilissimis dense irregulariter cinctâ; anfractibus plano-declivibus, ad basin rotundatis; aperturâ parvâ, margine basinque rosaceis.*

THE LIGHTNING-MARKED PHASIANELLA. Shell acuminate conical, rose-brown, here and there almost black, longitudinally lightning-marked with large yellowish flames, densely irregularly encircled throughout with very fine whitish lines; whorls flatly sloping, round at the base; aperture small, margin and base tinged with rose.

Hab. Australia.

The shell collected in the "Beagle" is certainly distinct from any other Australian form of *Phasianella*. It is of a solid contractedly-acuminated form, prominently flamed,

without any indication of transverse articulations, and the white hair-lines are of quite another type from those of preceding species; while the base of the shell and margin of the aperture are warmly tinged with rose.

Species 10. (Fig. a, b, Mus. Cuming.)

PHASIANELLA LENTIGINOSA. *Phas. testâ ovato-conicâ, cinereo-fuscescente, lineis nigricante-brunneis undique spiraliter articulatâ, longitudinaliter eleganter albo lentiginosâ, anfractibus superne subdeclivibus, deinde convexis; aperturâ parvisculâ, oratâ, fauce cœrulescente, margine nigricante-brunneo, columella callosâ.*

THE FRECKLED PHASIANELLA. Shell ovately conical, ash-brown, spirally articulated throughout with dark brown lines, longitudinally elegantly freckled with white; whorls sloping round the upper part, then convex; aperture rather small, ovate, bluish within, margin dark brown, columella callous.

Hab. Swan River, Australia.

Another very distinct species, in which the margin of the aperture is a rich dark-brown. The entire surface of the shell is articulated with brown lines interrupted by numerous delicate blue-white freckles.

Species 11. (Mus. Cuming.)

PHASIANELLA JASPIDEA. *Phas. testâ subacuminato-conicâ, rosaceo-brunneâ, minute saturatè lineatâ et albo punctatâ, longitudinaliter pallidè flammâtâ, flammis ad suturas roseis; anfractibus convexis; aperturâ parvisculâ.*

THE JASPER PHASIANELLA. Shell rather acuminate conical, rose-brown, minutely darker lineated and dotted with white, longitudinally delicately flamed, flames rose-tinted at the sutures; whorls convex; aperture rather small.

Hab. Zanzibar.

Of a delicate transparent rose-brown, copious sprinkled with very minute white dots, and delicately flamed, the flames at their origin in the sutures being rose-tinted.

Species 12. (Fig. *a, b, c*, Mus. Cuming.)

PHASIANELLA ETHIOPICA. *Phas. testā ovali-conicā, solidā, fusciscente-carneā et roseā, flammis lincisque albidis longitudinalibus variè lentiginosā, anfractibus supernè subdepressis, deinde convexis; aperturā parvā, margine viridè roseo, columellā albā, callositate supernè munitā.*

THE ETHIOPIAN PHASIANELLA. Shell ovately conical, solid, brownish flesh and rose, variously freckled with white longitudinal lines and flames, whorls rather

sloping round the upper part, then convex; aperture small, bright rose at the margin; columella white, furnished at the upper part with a callosity.

PHILIPPI, MS. in Mus. Cuming.

Hab. Seychelle Islands.

A lovely rose-tinted shell delicately freckled, but not articulated, with white. The rose is particularly bright, about the margin of the aperture.

1927



1928



1929



1930



1931



1932



PHASIANELLA.

PLATE V.

Species 13. (Fig. *a, b*, Mus. Cuming.)

PHASIANELLA KOCHII. *Phas. testâ globoso-conicâ, vividè coccineo-roseâ, supra longitudinaliter serrato-flammâtâ, infra spiraliter serrato-fasciatâ, flammis fasciâque albo- et roseo-punctatis, spirâ brevi, anfractibus tribus ad quatuor, rotundatis; aperturâ circulari-ovatâ, columellâ incurvâ.*

Koch's PHASIANELLA. Shell globosely conical, deep crimson-rose, above longitudinally serrately flamed, below spirally serrately banded, the flames and band being dotted with white and rose, spire short, whorls three to four, rounded; aperture circularly ovate, columella incurved.

PHILIPPI, Krauss, Moll. Südaf. p. 104. pl. 6. f. 4.

Hab. Natal and Falkland Islands.

The small specimen of this richly-coloured species, Fig. 13 *a*, is from the Falkland Islands, the larger one, Fig. 13 *b*, is from Natal. They are precisely identical in colour and especially in detail of pattern.

Fig. 14. (Fig. *a, b*, Mus. Cuming.)

The shell here figured proves to be a variety of the exceedingly variable *P. pulla*, for which see Plate VI.

Species 15. (Fig. *a, b*, Mus. Cuming.)

PHASIANELLA HISTRIO. *Phas. testâ conico-turbinatâ,*

succineâ, albo sparsim floccatâ, ad saturas intense coccineo-roseo maculatâ, spirâ exertiusculâ, anfractibus rotundatis; aperturâ parvâ.

THE HARLEQUIN PHASIANELLA. Shell conically turbinated, amber, flaked with white, spotted at the sutures with deep crimson-rose, spire rather exerted, whorls rounded; aperture small.

Hab. Islands of Masbate and Bacayon, Philippines: Cuming.

A very peculiarly-marked species, the colours being of a delicate-transparent kind, edged with brilliant crimson-rose.

Species 16. (Fig. *a, b, c, d*, Mus. Cuming.)

PHASIANELLA VIEUXII. *Phas. testâ oblongâ, angustè conicâ, olivaceo dense undato-lineatâ, opaco-albo fulguratâ et punctatâ, interdum purpurascens-roseâ, spirâ acutiusculâ, anfractibus convexis; aperturâ oblongo-ovato.*

VIEUX'S PHASIANELLA. Shell oblong, narrowly conical, densely wave-lineated with olive, lightning-marked and dotted with opake-white, sometimes purple-rose, spire rather acute, whorls convex; aperture oblong-ovate.

PAYRAUDEAU, Cat. Moll. Corse, p. 116. pl. 7. f. 5, 6.

Hab. Mediterranean.

Extremely variable in colour, but well distinguished by its oblong narrowly conical form.



18 a



18 b



19.



20 a



20 b



20 c



20 d.



20 e



20 f

PHASIANELLA.

PLATE VI.

Species 17. (Mus. Cuming.)

PHASIANELLA PERFORATA. *Phas. testâ minutè mobilicatâ, subgloboso-turbinatâ, virescente-albâ, nigro aut fusco aut rubro variè tinctâ et maculatâ, spirâ brevi, anfractibus subventricosâ; aperturâ amplâ, circulari.*

THE PERFORATED PHASIANELLA. Shell minutely umbilicated, somewhat globosely turbinated, greenish-white, variously stained and spotted with black, brown, or red, spire short, whorls rather ventricose; aperture large, circular.

PHILIPPI, Zeitschr. für Malak. 1848, p. 164.

Phasianella compla, Gould.

Hab. Mazatlan, Panama.

This minute shell is rather out of place in this genus. It has neither the form nor texture of a *Phasianella*.

Species 18. (Fig. a, b, Mus. Cuming.)

PHASIANELLA RUBRA. *Phas. testâ ovato-conicâ, rosacè, obscurè punctatâ, ad suturas opaco-albo maculatâ, anfractibus supernè subattenuatis; aperturâ parvisculâ, columellâ albâ, callosâ, conspicuè dentatâ.*

THE RED PHASIANELLA. Shell ovately conical, pink, obscurely dotted, spotted at the sutures with opaque white; whorls rather attenuated at the upper part; aperture rather small, columella white, callous, conspicuously toothed.

PEASE, MS. in Mus. Cuming.

Hab. Sandwich Islands.

I place this shell also, for the present, in this genus, as it has been referred to it by its describer; but I have great doubt of its being a *Phasianella*.

Species 19. (Mus. Cuming.)

PHASIANELLA STRIGATA. *Phas. testâ ovato-conicâ, subpellucidâ, intensè purpureo-rufa conspicuè remotè strigatâ; anfractibus supernè contractis, deinde rotundatis; aperturâ parvâ.*

THE STRIPED PHASIANELLA. Shell ovately conical, rather transparent, conspicuously distantly striped with deep purple-red; whorls contracted round the upper part, then rounded; aperture small.

Hab. Mouth of the Gaboon, West Africa.

The stripes of this very characteristic shell are curiously deeply coloured, considering the transparent ground on which they are painted.

Species 20. (Fig. a, b, c, d, e, f, Mus. Cuming.)

PHASIANELLA PULLA. *Phas. testâ oratâ vel subpyramidalè conicâ, variè coloratâ, nunc olivacea nunc roseo-fuscinâ strigatâ, interstitiis sapissimè minutè punctatis, anfractibus plano-convexis, interdum rotundatis; aperturâ ovatâ.*

THE SMALL PHASIANELLA. Shell ovate or somewhat pyramidally conical, variously coloured, streaked in a banded manner, now with olive, now with rose, interstices generally minutely dotted; whorls flatly convex, sometimes rounded; aperture ovate.

Turbo pullus, Linnaeus, Syst. Nat. p. 1233.

Turbo pictus, Da Costa.

Phasianella pullus, Sowerby.

▲ *Cingula pulla*, Fleming.

Rissoa pullus, Macgillivray.

Phasianella pulchella, Recluz.

Phasianella affinis, tessellata, pulchella, and *concreta*, C. R. Adams.

Phasianella tenuis, Philippi.

Phasianella intermedia, Sowerby.

Phasianella Capensis, Dunker.

Phasianella elongata, Krauss.

Hab. Middle and Southern Europe, West Indies, Cape of Good Hope.

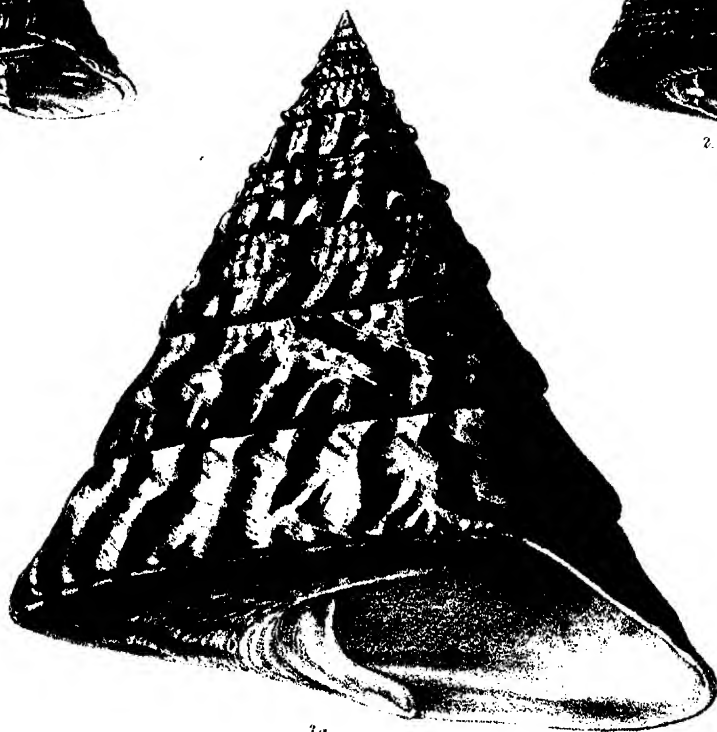
A most variable and prettily-painted species, but generally minutely dotted in the lighter parts.

PHASIANELLA.

	Plate.	pieces.		Plate	Species
<i>Ethiopica, Philippi</i>	IV.	12	<i>picta</i> , De Blainville	I.	1
<i>affinis</i> , Adams	VI.	20	<i>pulchella</i> , Adams	VI.	20
<i>australis</i> (<i>Buccinum</i>), Gmelin . .	I.	1	<i>pulchella</i> , Recluz	VI.	20
<i>bulimoides</i> , Lamarek	I.	1	<i>pulla</i> (<i>Turbo</i>), Linnæus	VI.	20
<i>Capensis</i> , Dunker	VI.	20	<i>reticulata</i> , <i>Reeve</i>	III.	7
<i>compta</i> , Gould	VI.	17	<i>rubra</i> , <i>Pease</i>	VI.	18
<i>concinna</i> , Adams	VI.	20	<i>sanguinea</i> , <i>Reeve</i>	III.	3
<i>elongata</i> , Krauss	VI.	20	<i>strigata</i> , <i>Reeve</i>	VI.	19
<i>fulgurata</i> , <i>Reeve</i>	IV.	9	<i>tenuis</i> , Philippi	VI.	20
<i>histrio</i> , <i>Reeve</i>	V.	15	<i>tessellata</i> , Adams	VI.	20
<i>intermedia</i> , Scacchi	VI.	20	<i>caria</i> , Enc. Méth.	I.	1
<i>jaspidea</i> , <i>Reeve</i>	IV.	11	<i>venosa</i> , <i>Reeve</i>	III.	5
<i>Kochii</i> , <i>Philippi</i>	V.	13	<i>ventricosa</i> , <i>Quoy and Gaimard</i> .	III.	6
<i>lentiginosa</i> , <i>Reeve</i>	IV.	10	<i>venusta</i> , <i>Reeve</i>	II.	2
<i>nivosa</i> , <i>Reeve</i>	IV.	8	<i>Vieuxii</i> , <i>Payraudeau</i>	V.	16
<i>perforata</i> , <i>Philippi</i>	VI.	17	<i>zebra</i> , <i>Gray</i>	III.	4

MONOGRAPH
OF THE GENUS
T R O C H U S .

‘Never so rich a gem was set in worse than gold.’—*Shakspeare*.



3a



3b



TROCHUS.

PLATE I.

Genus TROCHUS, *Linnaeus*.

Testa pyramidal-conica, basi plar-^ata, saepissimè viridè colorata, anfractibus plerumque granatis, interdum tuberculatis; aperturà depressà, labro simplici; columellà arcuatà, interdum contortà aut dentatà. Operculum corneum.

Shell pyramidally conical, flattened at the base, mostly bright-coloured, whorls generally grained, sometimes tubercled; aperture depressed, lip simple; columella arched, sometimes twisted or toothed. Operculum horny.

Under the head of *Trochus* I include, in addition to the type represented by *T. niloticus*, the following twelve genera of Gray and Adams:—*Stella*, *Lithopoma*, *Guildfordia*, *Chrysostoma*, *Balms*, *Modelia*, *Polydonta*, *Tectus*, *Pomautax*, *Astratium*, *Pachypoma*, and *Uvanilla*. Other groups of the great family of *Trochidae* will follow as facilities of procuring specimens are afforded me.

With the exception of one or two species inhabiting the seas of Central America, at Panama, California, and the West Indies, they are all natives of the shores of the Eastern and Pacific Islands and Australia.

Fig. 1. (Mus. Cuming.)

TROCHUS FLAMMULATUS. For description of this species see Plate XII. **SPECIES 70**, where the specimen figured is a red-flamed variety. In the specimen figured in the accompanying Plate, the flames are a greenish-olive, passing into olive-red at the base. The sculpture, characteristic in both, consists of an unusually large row of granules next the sutures, and a multitude of fine oblique wrinkles occupying the place of granules, below them.

Species 2. (Mus. Cuming.)

TROCHUS HANLEYANUS. *Troch. testâ subacutè conicâ, excavato-umbilicatâ, virescente-albâ, intensè viridî aut purpureo copiosissimè obliquè lineatâ, circum umbilicum purpurascens tinctâ, anfractibus concavo-declivibus, sparsim granulatis, ad marginem inferiorem plicato-tuberculatis, basi circulariter obsolete granoso-liratâ.*

HANLEY'S TROCHUS. Shell rather sharply conical, ex-

cavately umbilicated, greenish-white, very copiously obliquely lined with dark-green or purple, tinged with purple around the umbilicus, whorls concavely sloping, sparingly granulated, plicately tubercled at the lower margin, circularly obsolete granoso-lirated.

REEVE, *Proc. Zool. Soc.* 1842, p. 184. *Conch. Syst.* vol. ii. pl. 218. f. 11.

Trochus lineatus? Lamarck (not of Da Costa).

Hab. Australia.

The shell figured by Philippi for this species in Kuster's *Conch. Cab.* is my *T. nigro-punctatus*. It may be Lamarck's *T. lineatus*, but there is no certainty of it, and that name had been already used by Da Costa.

Species 3. (Fig. a, b, Mus. Cuming.)

TROCHUS NILOTICUS. *Troch. testâ pyramidal-conicâ, basi interdum crassè dilatâ, subsuperficialiter excavato-umbilicatâ, rosaceo-albâ, nigricante-sanguineo radiatim flammulâ, anfractibus plano-declivibus, obliquè sparsim granatis, ad marginem inferiorem plicato-tuberculatis, granis et tuberculis in anfractu ultimo obsoletis, basi concavo-planâ, circulariter tenuiliratâ, sanguineo-rosco maculatâ et flammulâ.*

THE WATER-FLOWING TROCHUS. Shell pyramidally conical, sometimes thickly dilated at the base, rather superficially excavately umbilicated, rose-white, radiately flamed with black blood-colour, whorls flatly sloping, obliquely sparingly grained, plicately tubercled at the lower margin, grains and tubercles obsolete in the last whorl, base concavely flattened, circularly finely ridged, spotted and flamed with blood-rose.

LINNAEUS, *Syst. Nat.* p. 1227.

Hab. Eastern Seas.

This well-known species is sculptured on the first few whorls with granules and marginal plicated tubercles, but gradually they become more feebly developed and soon obsolete. The base of the last whorl is sometimes dilated in a curiously swollen manner. The name appears to be derived from a fancied resemblance of the painting to flowing streams.

TROCHUS.—PLATE I.

Species 4. (Fig. 4; and Plate XII. Fig. 4 *b*, *c*, Mus.
Cuming.)

TROCHUS MACULATUS. *Troch. testā excavato-umbilicatā, latè conicā, ad apicem attenuatā, rufescente-olivaceā aut caruleo-virente, purpureo-rufa circa apicem maculatā, anfractibus validè crispato-granatis, granis prope suturas sæpè majoribus, basi densè circulariter granosoliriatā, purpureo-viridi aut rufescente maculatā aut undato-strigatā.*

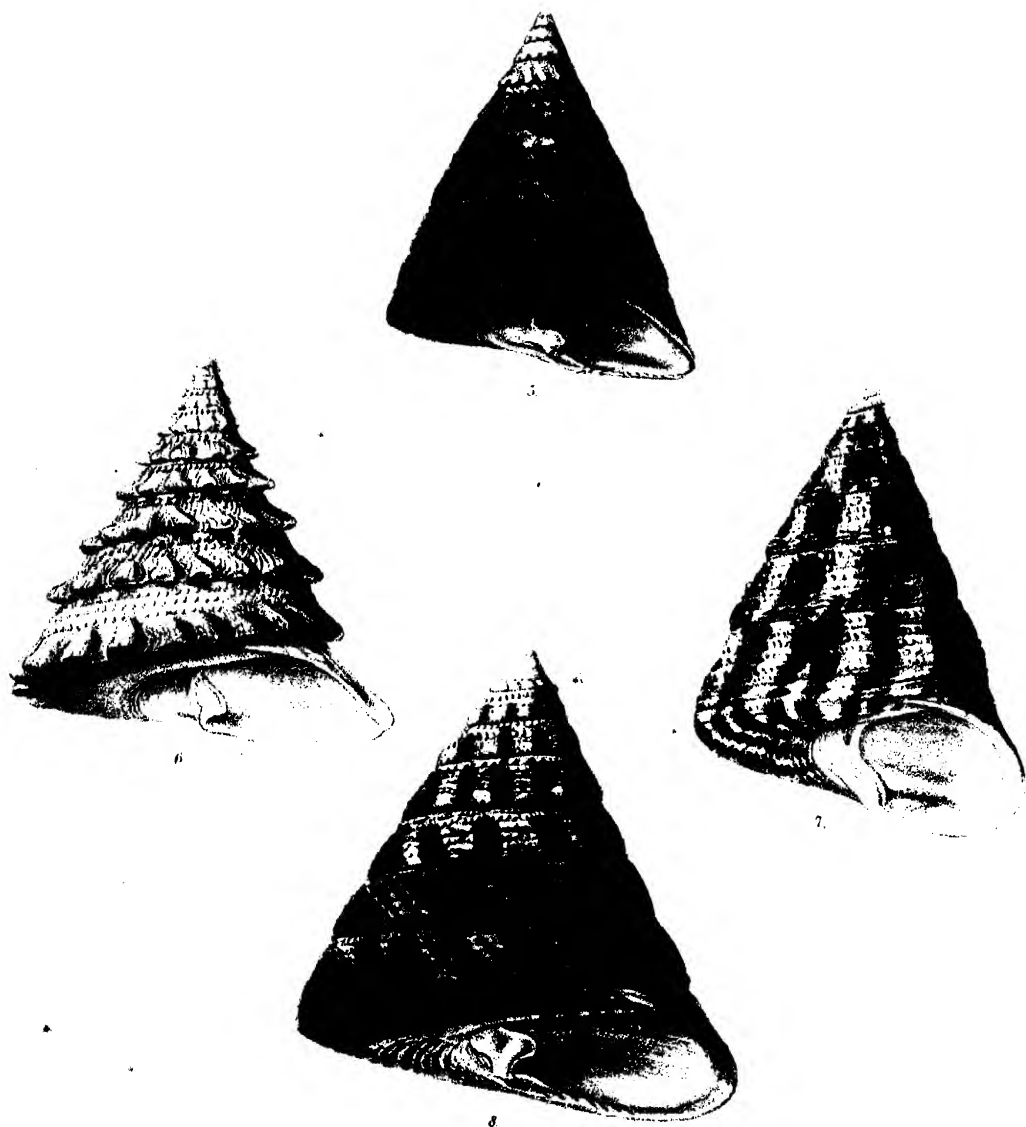
THE SPOTTED TROCHUS. Shell excavately umbilicated, broadly conical, attenuated at the apex, reddish-olive or blue-green, spotted about the apex with pur-

ple-red, whorls strongly crisply grained, grains near the sutures often larger, base densely circularly granosely ridged, blotched or wave-streaked with purple, green, or red.

LAMARCK, *Anim. sans vert.* vol. ix. p. 136.

Hab. Philippine Islands; Cuming.

The specimen here figured of *T. maculatus* is rather a small one. Finer specimens are given at Plate XII. Fig. 4 *a* and 4 *b*. The surface is strongly roughly grained throughout in a crisped manner, and the colouring about the apex mostly consists of copious blotches of blood-red.



TROCHUS.

PLATE II.

Species 5. (Mus. Cuming.)

TROCHUS CÆRULESCENS. *Troch. testâ imperforatâ, pyramidalî, olivaceo et prasino tinctâ; anfractibus concavo-planis, transversim obscure serialim granatis, versus apicem subobsolete plicato-nodiferis; basi tenuè sulcatâ, columellâ calloso-contortâ.*

THE BLUISH TROCHUS. Shell imperforate, pyramidal, stained with olive and green; whorls convexly flattened, transversely obscurely grained in rows, somewhat obsoletely plicately noded towards the apex; base finely grooved, columella callously twisted.

LAMARCK, Anim. sans vert. vol. viii. p. 134.

Trochus prasinus, Menke.

Pyramis cærulescens, Adams.

Pyramis prasinus, Adams.

Hab. Eastern and North Australian seas.

There can be no doubt that the shell described by Menke, in his 'Mollusca of New Holland,' with the name *T. prasinus*, is Lamarck's *T. cærulescens*, and it is not unlikely that on further research it may prove to be a variety of *T. pyramis*.

Species 6. (Mus. Cuming.)

TROCHUS NODULIFERUS. *Troch. testâ imperforatâ, pyramidalî, versus apicem gracitè acuminatâ, fulvescenti-albâ, rosaceo tinctâ; anfractibus subconcavo-declivibus, transversim serialim granatis, nudique ad marginem inferiorem squamato-nodatis; basi subtilissimè striatâ, columellâ calloso-contortâ.*

THE NODULED TROCHUS. Shell imperforate, pyramidal, slenderly acuminate towards the apex, fulvous-white, tinged with rose; whorls somewhat concavely sloping, transversely grained in rows, squamately noded throughout at the lower margin; base finely striated, columella callously twisted.

LAMARCK, Anim. sans vert. vol. viii. p. 134.

Pyramis noduliferus, Adams.

Hab. Philippine Islands; Cuming.

Dr. Philippi follows Chemnitz in regarding this species as a variety of *T. dentatus*, but it is perfectly distinct. It has a closer relationship with *T. pyramis* than with *T. dentatus*, though differing more from it in general aspect.

Species 7. (Mus. Cuming.)

TROCHUS ACUTANGULUS. *Troch. testâ subobscure umbilicatâ, pyramidalî, basi nunc angulatâ nunc rotundatâ, albâ, coccineo-rufo oblique grandiflavumâ; anfractibus transversim serialim granatis, granis obliquis, subpapilosis, irregularibus; basi impresso-striatâ, liris intermediis planulatis, intense coccineo-rufo tenatis, columellâ callosâ, subcontortâ.*

THE SHARPLY-ANGLED TROCHUS. Shell rather obscurely umbilicated, pyramidal, sometimes angled, sometimes rounded at the base, white, obliquely largely flamed with crimson-red; whorls transversely grained in rows, grains oblique, rather papillose, irregular; base impressly striated, intermediate ridges rather flat, filleted with deep crimson-red, columella callous, slightly twisted.

CHEMNITZ, Couch. Cab. vol. v. pl. 167. f. 1610.

Trochus couns, Gmelin.

Trochus clatus, Lamarck.

Trochus senatorius, Philippi.

Hab. Philippine Islands; Cuming.

This fine species may be readily distinguished from any other by its broadly flowing crimson flames.

Species 8. (Mus. Cuming.)

TROCHUS PYRAMIS. *Troch. testâ imperforatâ, pyramidalî, albidâ, viridî tinctâ et oblique variegatâ; anfractibus concavo-planatis, transversim serialim granatis, granis versus apicem prominentioribus, anfractibus superioribus obsolete plicato-nodiferis; basi tenuè sulcatâ, columellâ calloso-contortâ.*

THE PYRAMID TROCHUS. Shell imperforate, pyramidal, whitish, stained and obliquely variegated with green; whorls convexly flattened, transversely grained in rows, grains more prominent towards the apex, upper whorls obsoletely plicately noded; base finely grooved, columella callously twisted.

BORN, Test. p. 333.

Trochus obeliscus, Gmelin.

Trochus acutus, Lamarck.

Pyramis obeliscus, Adams.

Hab. Philippine Islands; Cuming.

An extremely variable species, more or less green or olive-green in colour, sometimes almost colourless, with a greater or less development of grains and nodules.



9



10



12



13



14



15

TROCHUS.

PLATE III.

Species 9. (Mus. Cuming.)

TROCHUS SQUARROSUS. *Troch. testâ excavato-umbilicatâ, subgloboso-conicâ, virescente-albâ, purpureo-roseo plus minus intensè lineatâ, maculatâ, et obliquè lineatâ; anfractibus convexis, obliquè striatis, tuberculato-nodosis, tuberculis vel nodis ad margines prominentioribus; basi sulcatâ, liris intermediis papilloso-granatis, purpureo-roseo copiosè maculatâ.*

THE ROUGH TROCHUS. Shell excavately umbilicated, somewhat globosely conical, greenish-white, more or less deeply stained, spotted, and obliquely lineated with purple-rose; whorls convex, obliquely striated, tubercularly noded, tubercles and nodules more prominent at the margins; base grooved, intermediate ridges papillosely grained, copiously spotted with purple-rose.

LAMARCK, Anim. sans vert. vol. ix. p. 137.

Trochus costatus?, Gmelin.

Polydonta costata, Adams.

Hab. Sandwich Islands.

Distinguished by a strongly developed tubercularly noded sculpture and by an obtuse globosely conoid form.

Species 10. (Mus. Cuming.)

TROCHUS REGIUS. *Troch. testâ pyramidal-conicâ, subangustè umbilicatâ, albâ, purpureo profusè maculatâ et gracilè strigatâ; anfractibus plano-declivibus, medio concaviusculis, undique validè et creberrimè nodoso-gemmatâ; basi densè granoso-gemmatâ, purpureo copiosè minutè teniatâ.*

THE ROYAL TROCHUS. Shell pyramidally conic, rather narrowly umbilicated, whitish, profusely spotted and slenderly streaked with purple; whorls flatly sloping, rather concave in the middle, everywhere strongly and very closely nodosely beaded; base densely grain-beaded, copiously minutely filleted with purple.

CHEMNITZ, Coneh. Cab. vol. v. p. 94. pl. 170. f. 1637.

Polydonta regis, Adams.

Hab. —?

The shell here figured is assigned by Mr. Adams to Chemnitz's *T. regius*, but it is not a satisfactory species. It has all the appearance of being a finely beaded, slenderly painted, sharply conical form of *T. maculatus*.

Species 11. (Mus. Cuming.)

TROCHUS VERRUCOSUS. *Troch. testâ pyramidal-conicâ, solidiusculâ, angustè excavato-umbilicatâ, virescente-albâ, purpureo-rufa obliquè flammatâ, flammis latiusculis, distantibus; anfractibus concavo-planatis, seriâtim granatis, ad margines tumidis et obtusè tuberculatis; basi subtilissimè granatâ, roseo sparsim minutè punctatâ.*

THE WARTY TROCHUS. Shell pyramidally conic, rather solid, narrowly excavately umbilicated, greenish-white, obliquely flamed with purple-red, flames rather broad, distant; whorls concavely flattened, grained in rows, swollen and obtusely tubercled at the margins; base very finely grained, sparingly minutely dotted with rose.

Gmelin, Syst. Nat. p. 3572. n. 31.

Conus acutangulus, Chemnitz.

Polydonta verrucosa, Adams.

Hab. Zanzibar.

It will be seen that each whorl of this species is encircled at the base with a swollen tubercled collar, and that the painting is distributed in conspicuous distant longitudinally oblique flames, which pass over the basal margin.

Species 12. (Mus. Cuming.)

TROCHUS DENTATUS. *Troch. testâ imperforatâ, elevato-pyramidalî, pagodiformi, virescente-albâ vel cinerâ, purpureo versus apicem sordidè inquinatâ; anfractibus planatis, obscurè plicato-granatis, deinde tumidiusculis, tuberculis squamatis magnis distantibus conspicuè armatis; basi lævigatâ, albâ medio linearî-sulcatâ, æruginosâ.*

THE TOOTHED TROCHUS. Shell imperforate, elevately pyramidal, pagoda-like, greenish-white or ash, dingily smeared towards the apex with purple; whorls flattened, obscurely plicately grained, then rather swollen, conspicuously armed with large distant squamate tubercles; base smooth, white, linearly grooved, verdigris-stained in the middle.

FORSKÆL, Egypt. Descr. Anim. p. 125.

Trochus foveolatus, Gmelin.

Trochus Persicus, Fabius Columna.

Trochus pyramidalis, Lamarck.

Pyramis dentatus, Adams.

Hab. Red Sea.

Mr. Adams gives Port Essington as the habitat of this well-known species, but I have not been able to confirm it, and I fear that some allied Australian species may have been mistaken for it. Be that as it may, *T. dentatus* is well known to be a native of the Red Sea.

Species 13. (Mus. Cuming.)

TROCHUS ALTUS. *Troch. testâ excavato-umbilicatâ, acutè conicâ, albâ, viridi et purpureo conspicuè strigatim tessellatâ; anfractibus plano-declivibus, undique validè nodoso-granatis; basi nitidè granosâ, sparsim rufo punctatâ.*

THE HIGH TROCHUS. Shell excavately umbilicated, sharply conical, white, conspicuously tessellated in a streaked manner with purple and green; whorls flatly sloping, strongly nodosely grained throughout; neatly grained at the base, sparingly dotted with red.

PHILIPPI, in Küster, Conch. Cab. Trochus, p. 217. pl. 32. f. 7.

Trochus turris, Philippi.

Polydonta turris, Adams.

Hab. —?

Partaking very much of the character of *T. maculatus*, from which it is chiefly distinguished by its firm sharply conical form.

Species 14. (Mus. Cuming.)

TROCHUS TENTORIUM. *Troch. testâ excavato-umbilicatâ, abbreviato-conicâ, alveariformi, virescente; anfractibus obliquè fortiter nodoso-costatis, interstitiis densè granoso-clathratis; basi plano-concavâ, granatâ, roseo sparsim minutè punctatâ, margine rotundato.*

THE PAVILION TROCHUS. Shell excavately umbilicated, shortly conical, hive-shaped, greenish; whorls obliquely strongly nodosely ribbed, interstices closely grain-latticed; base flatly concave, grained, sparingly minutely dotted with rose, margin rounded.

CHEMNITZ, Conch. Cab. vol. v. p. 90. pl. 169. f. 1628.

Polydonta tentorium, Adams.

Hab. Philippine Islands.

Dr. Philippi is wrong in citing this species as a variety of *T. maculatus*. The shell here figured, truly assigned to it by Mr. Adams, is of quite another specific type, strongly nodosely ribbed, the interstices being closely latticed with rows of grains, while it is always of a uniform pale-green colour.

Species 15. (Mus. Cuming.)

TROCHUS CONCINNUS. *Troch. testâ subprofundè excavato-umbilicatâ, subpyramidal-conicâ, virescente, purpureo-rufo tessellatâ et strigatâ; anfractibus plano-declivibus, seriatim densè granatis, ad marginem tuberculato-squamatis; basi densè granoso-liratâ, virescente, livido-purpureo peculiariter radiatim flammâtâ.*

THE PRETTY TROCHUS. Shell rather deeply excavately umbilicated, somewhat pyramidally conical, greenish, tessellated and streaked with purple-red; whorls flatly sloping, densely grained in rows, tubercularly squamate at the margin; densely grain-ridged at the base, greenish, peculiarly radiately flamed with livid-purple.

PHILIPPI, Zeitschr. für Malak. 1846, p. 105.

Polydonta squamigera, Adams.

Hab. —?

The lower margin of each whorl is armed with strongly developed spouted tubercles, and the base of the shell is painted in a characteristic manner with zigzag radiating flames of livid-purple, well represented in one of Dr. Philippi's figure.



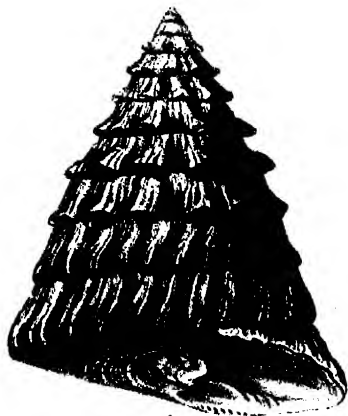
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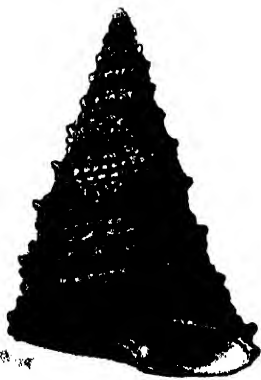
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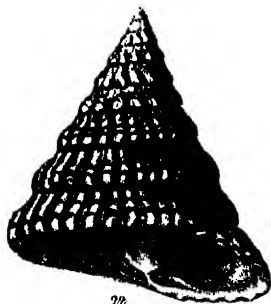
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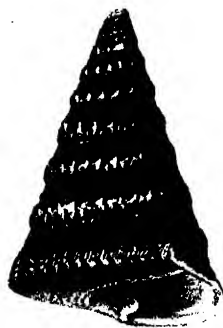
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22



21

TROCHUS.

PLATE IV.

Species 16. (Mus. Cuming.)

TROCHUS EXALTATUS. *Troch. testâ murrino-conicâ, imperforatâ, albidâ, olivaceo rufoque pallidâ maculatâ; anfractibus convexis, rugoso-granatis, ad suturas nodatis, deinde longitudinaliter costatis, costis brevibus, tumidis, in anfractu ultimo diminuentibus, interstitiis fusciscentibus; basi concavo-planâ, densè minutè sulcatâ, columellâ subcalloso-contortâ.*

THE EXALTED TROCHUS. Shell turreted-conical, imperforate, whitish, faintly spotted with olive and red; whorls convex, rugosely grained, noded at the sutures, then longitudinally ribbed, ribs short, swollen, diminishing on the last whorl, interstices brownish; base concavely flattened, densely minutely grooved, columella slightly callously twisted.

PHILIPPI, in Küster, Conch. Cab. Trochus, p. 108. pl. 17. f. 8.

Hab. Moluccas.

Chiefly distinguished by the short puffy character of the ribs, crossing the lower portion of the whorls, which is swollen into the form of an encircling collar.

Species 17. (Mus. Cuming.)

TROCHUS CRENULATUS. *Troch. testâ imperforatâ, subobeso-conicâ, alveolariformi, albidâ, viridi vividè tinctâ; anfractibus obliquè longitudinaliter granatis, ad suturas concavis, deinde tumidis, verrucoso-costatis; basi concavo-planâ, densè liratâ, versus marginem granatâ.*

THE CRENULATED TROCHUS. Shell imperforate, rather stoutly conical, hive-shaped, whitish, brightly stained with green; whorls obliquely longitudinally grained, concave at the sutures, then swollen, wart-ribbed; base concavely flattened, densely ridged, grained toward the margin.

LAMARCK, Anim. sans vert. vol. I. p. 140.

Pyramis crenulatus, Adams.

Hab. Philippine Islands; Cuming.

The grained sculpture of this species gives a crenulated character to the sutures.

Species 18. (Mus. Cuming.)

TROCHUS FENESTRATUS. *Troch. testâ imperforatâ, pyramidalî, albidâ, viridi maculatâ; anfractibus undique rugoso-crenulatis, longitudinaliter costatis, costis brevibus, verrucosis, albidis; basi planatâ, acutè sulcatâ.*

THE LATTICED TROCHUS. Shell imperforate, pyramidal, whitish, blotched with green; whorls wrinkle-crenulated throughout, longitudinally ribbed, ribs short, warty, whitish; base flattened, sharply grooved.

GMELIN, Syst. Nat. p. 3582.

Trochus pyramidalis asper, Chemnitz.

Pyramis fenestratus, Adams.

Hab. Philippine Islands.

This and the preceding may prove to be different states of the same species; but the present is more pyramidally conical, and the ribs are more prominently developed.

Species 19. (Mus. Cuming.)

TROCHUS MAURITIANUS. *Troch. testâ imperforatâ, pyramidalî-conicâ, solidiusculâ, albidâ, pallidè rubro viridique variegatâ; anfractibus convexo-declivibus, obliquè longitudinaliter granoso-corrugatis et squamato-tuberculatis, tuberculis versus basin ecanidis; basi concavo-planâ, medio sulcatâ, columellâ validè calloso-tortâ.*

THE MAURITIUS TROCHUS. Shell imperforate, pyramidally conical, rather solid, whitish, variegated with faint red and green; whorls convexly sloping, obliquely longitudinally grain-wrinkled and squamately tubercled, tubercles fading towards the base; base concavely flattened, grooved in the middle, columella strongly callously twisted.

GMELIN, Syst. Nat. p. 3582.

Pyramis Mauritianus, Adams.

Trochus costifer, Jonas.

Hab. Mauritius, Philippine Islands; Cuming.

Partaking of the general character of *T. noduliferus*, though apparently far removed from it.

Species 20. (Mus. Cuming.)

TROCHUS ACUTUS. *Troch. testâ imperforatâ, gracili-pyramidalî, albidâ, virescente-cinereo tinctâ; anfractibus*

acinae angulatis, biseriatim muricato-nodatis; basi convexo-planatâ, tenuè sulcatâ, columellâ calloso-contortâ.

THE SHARP TROCHUS. Shell imperforate, slenderly pyramidal, whitish, stained with greenish-ash; whorls narrow, concavely sloping, sparingly nodosely grained, then angled, encircled with two rows of prickly nodules; base convexly flattened, finely grooved, columella callously twisted.

LAMARCK, Anim. sans vert. vol. ix. p. 141.

Pyramis acutus, Adams.

Hab. Philippine Islands; Cuming.

The most elongately pyramidal and prickly species of the genus.

TROCHUS TRISERIALIS. *Troch. testâ imperforatâ, gracilipyramidalî, lutescente, viridi viciè variegatâ; anfractibus concavo-declivibus, obliquè corrugato-striatis, nodulis subdistantibus triseriatim cinctis; basi convexo-planâ; densè sulcatâ, columellâ breviter calloso-contortâ.*

TRISERIAL TROCHUS. Shell imperforate, slenderly pyramidal, yellowish, brightly variegated with green; whorls concavely sloping, obliquely wrinkle-striated, encircled with three rows of distant nodules; base

sharply narrowed, closely grooved, columella shortly callously twisted.

LAMARCK, Anim. sans vert. vol. ix. p. 140.

Pyramis triserialis, Adams.

Hab. Philippine Islands; Cuming.

In this species the sculpture is not of a prickly character, but consists of regular obtuse granular nodules.

SPECIES 22. (MUS. CUMING.)

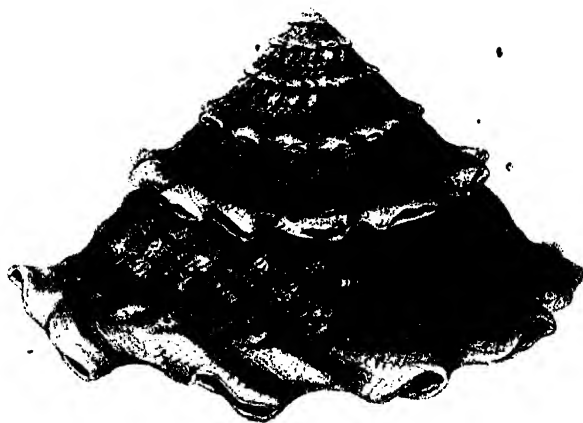
TROCHUS ARCHITECTONICUS. *Troch. testâ imperforatâ, acutè conicâ, opaco-albâ, pallidè virescentetinctâ; anfractibus concavis, deinde tumidis, undique longitudinaliter plicato-costatis, costis numerosis, interstitiis profundè excavatis; basi convexo-planatâ, validè sulcatâ, columellâ calloso-contortâ.*

ARCHITECTURAL TROCHUS. * Shell imperforate, sharply conical, opaque-white, faintly tinged with green; whorls concave, then swollen, longitudinally plicately ribbed throughout, ribs numerous, interstices deeply excavated; base convexly flattened, strongly grooved, columella callously twisted.

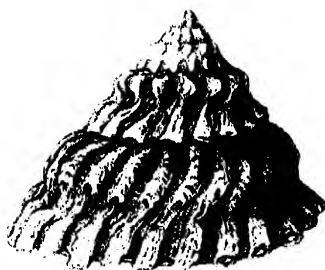
P. *amis architectonicus*, Adams, Pro. Zool. Soc. 1851. p. 152.

H. Signet Bay, North Australia; Dring.

This elegant and very distinct species is remarkable for its deeply cut sculpture.



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TROCHUS.

PLATE V.

Species 23. (Mus. Cuming.)

TROCHUS JAPONICUS. *Troch. testâ imperforatâ, depresso-conicâ, ad basin expansâ, fulvo-spadicâ; anfractibus convexo-declivibus, obliquè granoso-corrugatis et promiscuè superficialiter plicatis, marginibus enormiter compressè squamatis; basi lineari-sulcatis, liris crenulatis, columellâ opaco-callôsâ.*

THE JAPAN TROCHUS. Shell imperforate, depressly conic, expanded at the base, fulvous-rust or fawn-coloured; whorls convexly sloping, obliquely granosely wrinkled and promiscuously superficially plicated, margins enormously compressly sealed; base linearly grooved, ridges crenulated, columella opaquely callous.

DUNKER, Abbild. und Besch. Conch. vol. i. Trochus, pl. 5. f. 1.

Pomautæ Japonicus, Gray.

Hab. Japan.

This fine species is curiously characterized by the enormous scales which are formed at the basal edge of each whorl by a rude expanded folding of the shell-growth.

Species 24. (Mus. Cuming.)

TROCHUS DIGITATUS. *Troch. testâ imperforatâ, obtusè conicâ, purpurascens-albâ; anfractibus rudè convexis, supernè et infernè obliquè plicato-squamatis, costis inferioribus super marginem productis; basi convexiusculâ, liratâ, liris subdistantibus crenulatis.*

THE FINGERED TROCHUS. Shell imperforate, obtusely conical, purplish-white; whorls rudely convex, obliquely squamately ribbed above and below, lower ribs produced beyond the margin; base rather convex, ridged, ridges somewhat distant, crenulated.

Turbo digitatus, Deshayes, Mag. de Zool. 1841, pl. 36.

Trochus digitatus, Philippi.

Hab. Central America.

This species differs from *T. unguis*, which it greatly resembles in general aspect, and has been often mistaken for it, in two important particulars. The radiating squamate ribs extend conspicuously over the whorls in a compressed form, in an uncouth straggling manner, the interstices being concavely excavated; and the base of the shell is convex and widely crenulately ridged, as in *T. gibbe-*

rosus. In *T. unguis* the base is concave and finely striated.

Species 25. (Mus. Cuming.)

TROCHUS GIBBEROSUS. *Troch. testâ imperforatâ, depresso-conoidè, opaco-albâ, aurantio-ferrugineo variè finetâ; anfractibus declivi-convexis, costis parvis nodosis striisque creberrimis obliquè decussatis, ad marginem obsolete obtusè squamatis; basi convexo-planatâ, liratâ, liris subdistantibus, crenulatis, interstitiis excavatis, striato-decussatis.*

THE PIMPLED TROCHUS. Shell imperforate, depressly conoid, opaque-white, variously stained with orange-rust; whorls slopingly convex, obliquely decussated with small nodose ribs and very close-set striae, obsoletely obtusely squamate at the margin; base convexly flattened, ridged, ridges rather distant, crenulated, interstices excavated and striately decussated.

Trochus gibberosus *Nova-Zelandiæ*, Chemn. Conch. Cab. vol. x. p. 287. vign. 23. p. 286. f. a, b.

Trochus inequalis, Martyn (not of Chemnitz).

Trochus ochraceus, Philippi.

Trochus tentorium, Anton.

Uvanilla gibberosa, Adams.

Hab. Australia and New Zealand.

As Dr. Philippi has already shown in his monograph of *Trochus*, in Kuster's 'Conchylien Cabinet,' this species was originally figured by Martyn, in his 'Universal Conchologist,' with the name *T. inequalis*; but that name had been used three years before by Martini and Chemnitz in reference to another species. A few years later Chemnitz copied Martyn's figure into his 'Conchylien Cabinet,' vol. x., as a vignette, and named it *T. gibberosus* *Nova-Zelandiæ*. The species is well characterized by its peculiar orange-rust colouring and by the small nodose ribs crossing obliquely in a direction opposite to that of the oblique striae of growth.

Species 26. (Mus. Cuming.)

TROCHUS ENDOSUS. *Troch. testâ imperforatâ, latè conoidè, spadiceo-rufâ, epidermide persistente fuscâ densè fibrosâ undique indutâ; anfractibus declivi-convexis, costis brevibus corrugatis et nodulorum serie moniliformi exsculptis, margine conspicuè undato-tuberculato; basi convexo-planâ, tri-quadriliratâ.*

TROCHUS.—PLATE V.

THE WAVED TROCHUS. Shell imperforate, broadly conoid, fawn-red, covered everywhere with a brown persistent densely fibrous epidermis; whorls slopingly convex, sculptured with short wrinkled ribs and a necklace-like row of nodules, margin conspicuously wave-tubercled; base convexly flat, three- to four-ridged.

WOOD, Ind. Test. Supp. pl. 5. f. 1.

Trochus gigas, Anton.

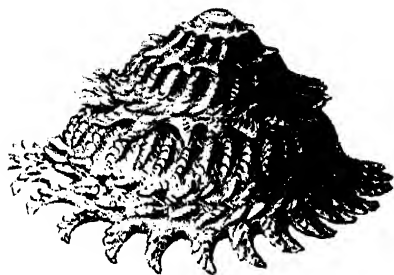
Pomaulax undosus, Gray.

Hab. California.

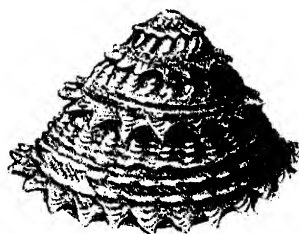
Though so distinct a species from the preceding, the sculpture of *T. undosus* presents only a slight modification of that of *T. gibberosus*. The very characteristic waved tubercle with which the basal margin of each whorl is corded is a modified form of the nearly closed marginal scale of *T. gibberosus*, seen in a ruder more undeveloped state in *T. Japonicus*, and the general typical structure of the columella is the same. Messrs. Gray and Adams nevertheless contrive to place them in different genera.



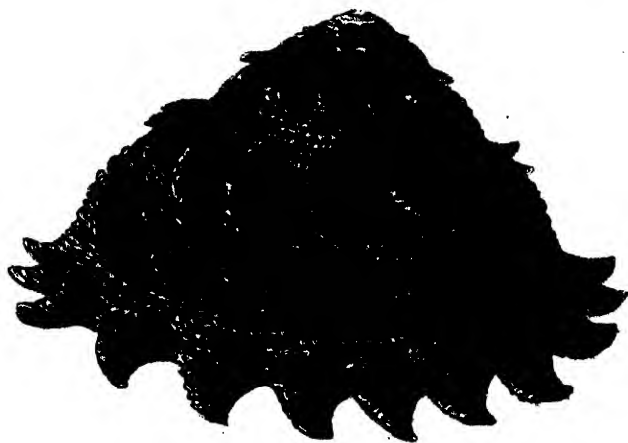
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TROCHUS.

PLATE VI.

Species 27. (Mus. Cuming.)

TROCHUS COOKIANUS. *Troch. testâ imperforatâ, tumido-conoideâ, sordidè fuscâ, versus apicem livido-æneâ; anfractibus rotundatis, obliquè costatis, costis imbricatosquamosis regularibus, striis incrementi lamelliformibus densè obliquè decussatis; basi medio concavâ, circa columellam fulvo-spadicèâ, versus marginem convexiusculâ, densè imbricato-liratâ.*

COOK'S TROCHUS. Shell imperforate, tumidly conoid, dingy brown, livid copper-green towards the apex; whorls rounded, obliquely ribbed, ribs imbricately scaled, regular, densely obliquely decussated with lamelliform striae of growth; base concave in the middle, fulvous-fawn-colour round the columella, convex towards the margin, closely imbricately ridged.

Trochus Cookianus ex Fretò Cookiano Zealandiæ-Novæ, Chemnitz.

Trochus sulcatus, Martyn.

Trochus Cookii, Gmelin.

Hab. New Zealand.

This well-known species, originally named by Chemnitz after one of its habitats, which habitat, Cook's Strait, New Zealand, was named after our old navigator Captain Cook, illustrates in a conspicuous manner the obliquely decussating sculpture common to the *Trochi*. The ribs and ridges of the *Trochi* do not correspond with the rings of the *Scalariæ*,—which are analogous to the varices in the shells of the *Murices* and other genera of *Canalifera*, and run parallel with the margin of the aperture,—but are formed in the contrary direction.

Species 28. (Mus. Cuming.)

TROCHUS LONGISPINA. *Troch. testâ subampliter profundè umbilicatâ, plus minus depressè conoideâ, lacteâ, auro-ferrugineo variè tinctâ; anfractibus supernè convexis, deinde concaviusculis, rugis crispatis crenulatis obliquè promiscuè sculptis, ad marginem radiatim planisquamatis; basi convexâ, radiatim pulcherrimè densè striato-lamellatâ, circulariter obscurè triliratâ.*

THE LONG-SPINED TROCHUS. Shell rather largely deeply umbilicated, more or less depressly conoid, cream-colour, variously stained with golden rust; whorls

convex at the upper part, then rather concave, obliquely promiscuously sculptured with crenulated crisped wrinkles, radiately flatly scaled at the margin; base convex, radiately very beautifully densely striately lamellated, circularly obscurely ridged.

LAMARCK, Anim. sans vert. vol. ix. p. 122.

Trochus solaris Indiæ, Chemnitz (not *Trochus solaris, Linnaeus*, which is *Phorus solaris*).

Calcar majus, Chemnitz.

Trochus heliacus, Philippi.

Trochus aster, Philippi.

Astratum longispinna, Adams.

Hab. West Indies.

This very beautifully sculptured and well-known West India species varies in the more obtuse or more prickly development of the marginal scales, and in its more depressed or more elevated conical plan of convolution. By a corresponding correlation of growth the umbilicus, as a general rule, is more widely open in the depressed than in the conical forms, but it may be partially closed over in either form by an overlaying of the adjoining lip.

Species 29. (Mus. Cuming.)

TROCHUS COSTULATUS. *Troch. testâ obtusè umbilicatâ, subulatè conicâ, fulvescente, pallidè ferrugineo tinctâ; anfractibus declivi-convexis, striis obliquis lineisque transversis granosis sculptis, ad marginem radiatim planisquamatis, squamis breviusculis; basi convexâ, radiatim densè striato-lamellatâ, circulariter obscurè quadriliratâ.*

THE FINE-RIBBED TROCHUS. Shell with a covered umbilicus, rather broadly conical, fulvous, faintly tinged with rust; whorls slopingly convex, sculptured with oblique striae and transverse granose lines, radiately flatly scaled at the margin, scales rather short; base convex, radiately densely striately lamellated, circularly obscurely four-ridged.

LAMARCK, Anim. sans vert. vol. 9. p. 127.

Hab. West Indies.

Constantly distinct from *T. longispinna*, though many would be disposed to regard it as only a modified form of that species. The longitudinal sculpture is more subdued,

and the marginal scales are shorter and rather broader in proportion.

Species 30. (Mus. Cuming.)

TROCHUS IMPERIALIS. *Troch. testā ampliter umbilicatā, abbreviato-conoideā, alceariformi, purpureo-cinereā, ad apicem rubrā; anfractibus convexo-turgidis, deinde concaviusculis, undique serialim muricato-imbricatis, ad marginem radialim squamatis, squamis planis, magnis; basi circa umbilicum laevigatā, medio dense muricato-imbricatā.*

THE IMPERIAL TROCHUS. Shell largely umbilicated, shortly conoid, hive-shaped, purple-ash, red at the

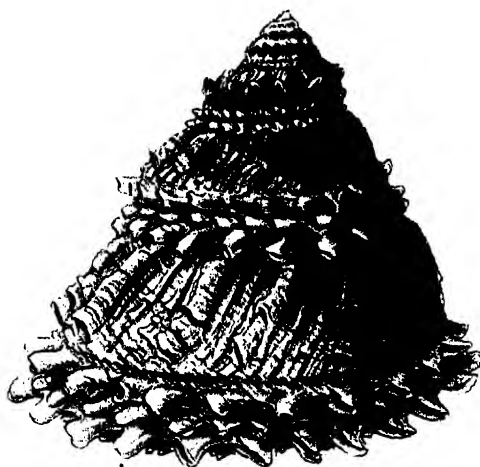
apex; whorls convexly turgid, then rather concave, everywhere prickly imbricated in rows, radiately scaled at the margin, scales flat, large; smooth around the base, densely prickly imbricated in the middle.

Trochus solaris imperialis, Chemnitz, Conch. Cab. p. 135. pl. 173. f. 1714; and pl. 174. f. 1715.

Trochus heliotropium, Martyn.

Hab. New Zealand.

The very characteristic West Indian type which we have just been describing in *T. longispina* and *latispina*, is magnificently represented in New Zealand by the single species under consideration, *T. imperialis*; and this peculiar form of *Trochus*, constituting Link's genus *Australium*, has not been collected in any other part of the world.



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TROCHUS.

PLATE VII.

Species 31. (Mus. Cuming.)

TROCHUS AMERICANUS. *Troch. testâ imperforatâ, subpyramidaliconicâ, solidiusculâ, albidâ; anfractibus plano-declivibus, longitudinaliter subtiliter-nodosè corrugato-liratis, ad marginem abruptè turgidis, rotundatis, liris subprominentioribus, suturis impressis; basi rudè granoso-liratâ, circa umbilicum incrassatâ.*

THE AMERICAN TROCHUS. Shell imperforate, somewhat pyramidally conical, rather solid, whitish; whorls flatly sloping, longitudinally finely nodosely wrinkle-ridged, abruptly bulging and rounded at the margin, with the ridges rather more prominent, sutures impressed; base rudely granosely ridged, thickened round the umbilicus.

Gmelin, Syst. Nat. p. 3581. Chemn. Conch. Cab. vol. v. p. 33. pl. 162. f. 1534, 1535.

Hab. Florida.

The basal margin of the whorls are not angled in this species, but turgidly rounded; and the sculpture consists of a regular succession of finely noded wrinkle-ridges.

Species 32. (Mus. Cuming.)

TROCHUS CUBANUS. *Troch. testâ imperforatâ, conicâ, spadiceo-albâ; anfractibus convexo-declivibus, obsolete corrugato-striatis, medio plicato-nodatis, ad marginem plicato-squamatis; squamis ocellis, digitatis, conspicuè descendentibus, basi sparsim granulâ, circa umbilicum incrassatâ.*

THE CUBA TROCHUS. Shell imperforate, conical, fawn-white; whorls concavely sloping, obsoletely wrinkle-striated, plicately noded in the middle, plicately scaled at the margin; scales closed, digitate, conspicuously descending.

Philippi, Zeitschr. für Malac. 1848. p. 104.

Hab. Central America.

Chiefly distinguished by the descending digitate character of the basal marginal scales.

33. (Mus. Cuming.)

TROCHUS COLUMELLARIS. *Troch. testâ imperforatâ, conicâ, viridis-albâ; anfractibus obliquè subobsoletè corrugato-*

striatis, ad marginem plicato-squamatis; squamis conspicuè descendentibus, muricatis; basi densè minutissimè imbricatâ, circa umbilicum callosâ, ceruleo-virente.

THE COLUMELLAR TROCHUS. Shell imperforate, conical, greenish-white; whorls obliquely rather obsoletely striated, plicately scaled at the margin, scales conspicuously descending, prickly; base densely very minutely imbricated, callous blue-green around the umbilicus.

Philippi, Abbild. und Besch. Conch. vol. 2. p. 35. pl. 7. f. 3.

Hab. Australia.

Closely allied to *T. rhodostoma*, but always distinguished from that species in being more finely sculptured, and in not having a double row of marginal scales, while the callosity around the umbilicus, instead of being a deep crimson-lake, is of a blue-green verdigris colour.

Species 34. (Mus. Cuming.)

TROCHUS CÆLATUS. *Troch. testâ imperforatâ, obconicoideâ, flavescente-lacteâ, versus apicem viridi variegatâ; anfractibus superne concavis, obliquè imbricatis, inferne rotundatis, triseriatim muricato-squamatis; basi convexâ, validè imbricato-costatâ.*

THE CARVED TROCHUS. Shell imperforate, stoutly conical, yellowish cream-coloured, variegated with green towards the apex; whorls concave round the upper part, obliquely imbricately plicated, rounded at the lower, encircled with three rows of prickly scales; base convex, strongly imbricately ribbed.

Chemnitz, Conch. Cab. vol. v. p. 33. pl. 162. f. 1536, 1537.

Hab. West Indies.

This fine species, the most abundant of the group, is well distinguished by its basal fringe of prickly scales.

Species 35. (Mus. Cuming.)

TROCHUS RHODOSTOMA. *Troch. testâ imperforatâ, conicâ, albâ; anfractibus acutè declivibus, obliquè rudè plicato-corrugatis, ad marginem acutangulis, biserialim spinoso-*

cutâ, callo circa umbilicum intensè purpureo-roseo.

THE RED-MOUTH TROCHUS. Shell imperforate, conical, white; whorls sharply sloping, obliquely rudely plicately wrinkled, sharply angled at the margin, encircled with two rows of strong erect spine-scales; base densely imbricated, callosity around the umbilicus deep purple-rose.

LAMARCK, Anim. sans vert. vol. v. p. 127.

Hab. Island of Tortola, West Indies.

Encircled with a double row of unusually erect spine-like scales, but mainly distinguished by the callosity around the umbilicus being of a deep purple-rose or lake colour.

This shell I had regarded as a distinct species from the preceding; but notwithstanding its very different aspect, I am forced to the conclusion that it is only a variety in which the rude oblique plicated wrinkles are broken up

into grains, and the basal scales are reduced to the simplest possible form of development. The imbricated base, with its deep purple-lake callosity, is the same.

Species 37. (Mus. Cuming.)

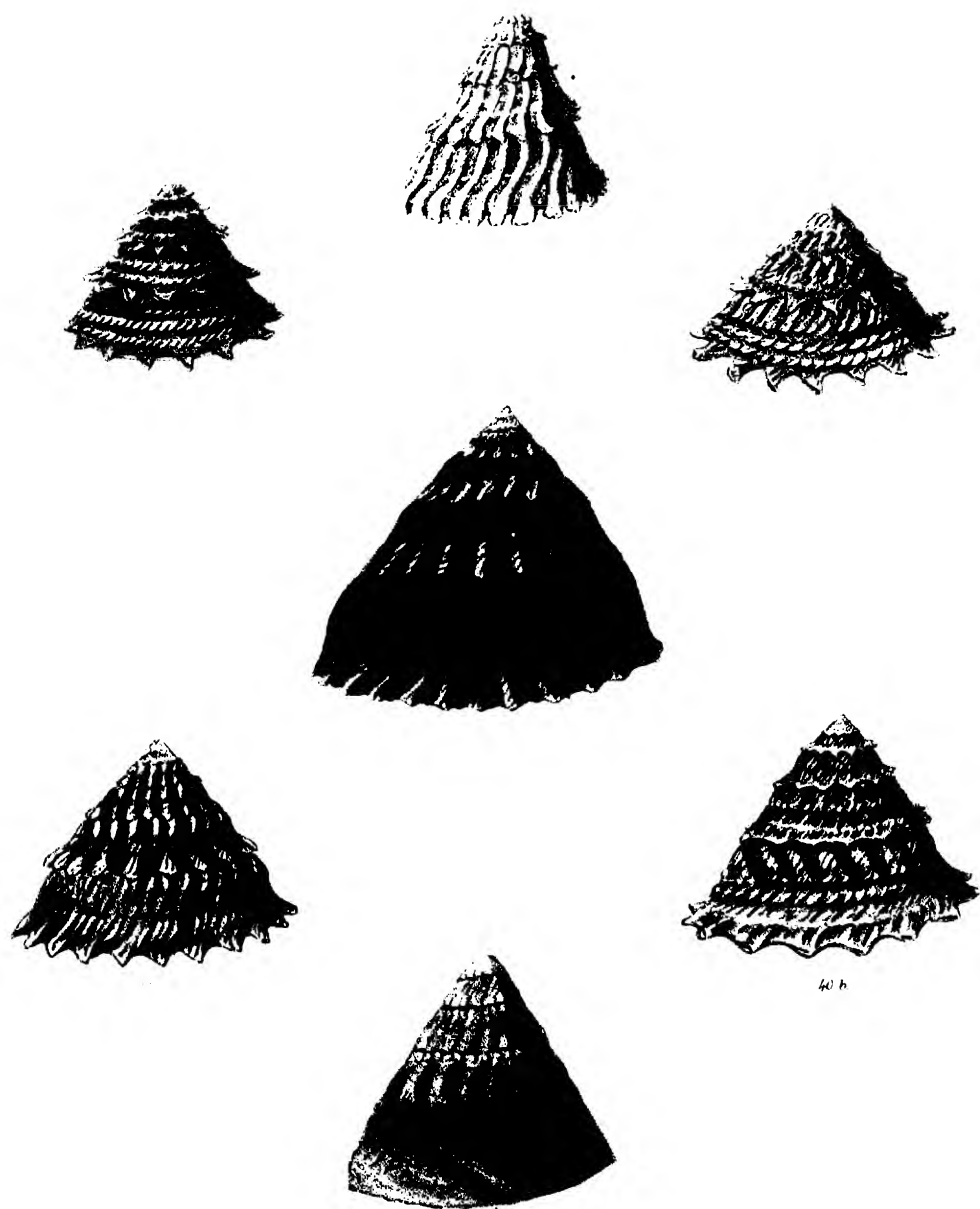
TROCHUS IMBRICATUS. *Troch. testâ imperforatâ, acutè conoidèâ, livido-albâ; anfractibus convexo-declivibus, undique validè angustè squamato-costatis, costis medio interruptis, ad marginem acutè descendentibus; basi rugoso-striatâ.*

THE IMBRICATED TROCHUS. Shell imperforate, sharply conoid, livid-white; whorls convexly sloping, everywhere strongly narrowly squamately ribbed, ribs interrupted in the middle, sharply descending at the margin; base rugosely striated.

MELIN, Syst. Nat. p. 3581.

Tab. West Indies; Honduras.

Always remarkable for the very prominently descending character of the scale-ribs.



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TROCHUS.

PLATE VIII.

Species 38. (Mus. Cuming.)

TROCHUS ¹**COROLLA.** *Troch. testā imperforatā, acutē conicā, albidā, fuscescente tinctā; anfractibus acutē declivibus, obliquē plicato-costatis, costis subundatis, ad marginem in squamis descendētibz, costis interstitiisque undique decussatim corrugato-striatis; basi densē imbricato-liratā.*

THE CORONET TROCHUS. Shell imperforate, sharply conical, whitish, tinged with brown; whorls sharply sloping, obliquely plicately ribbed, ribs slightly waved, descending at the margin in scales, ribs and interstices decussated throughout with wrinkled striae; base densely imbricately ridged.

Hab. West Indies.

It may very reasonably be argued that this is a variety of *T. imbricatus*, but I do not at present see any intermediate form. Besides being uniformly smaller, the entire surface is delicately wrinkle-striated, and the base of the shell is regularly ridged.

Species 39. (Mus. Cuming.)

TROCHUS **AURIPIGMENTUM.** *Troch. testā imperforatā, abbreviato-conoideā, luteā et virente, albo minutē tæniatā; anfractibus acutē declivibus, plus minus granosis, granisque in cingulis tribus moniliformibus, ad marginem transversim compressē muricato-squamatis; basi radiatim densē lamellato-striatā, circulariter obscurē liratā, callo circa umbilicum aureo-rufō.*

THE GOLDEN PIGMENT TROCHUS. Shell imperforate, shortly conoid, yellow and green, minutely filleted with white; whorls sharply sloping, more or less grained, with three encircling necklaces of grains, transversely compressly prickly-scaled at the margin; base radiately lamellately striated, circularly obscurely ridged, callus around the umbilicus golden-red.

JONAS, Zeitschr. für Malac. 1849, p. 147.

Hab. Panama.

Distinguished by a strikingly coloured golden-red callosity around the umbilicus. Exteriously the shell is of a yellowish-green colour, encircled with necklaces of granules, which are half green and half white.

Species 43. (Fig. a, b, Mus. Cuming.)

TROCHUS **LATISPINA.** *Troch. testā imperforatā, abbreviato-conoideā, cinereo-fuscatā, caruleo-olivaceo et albo lentiginosā; anfractibus acutē declivibus, granis obliquē productis aspersis, ad marginem transversim compressē muricato-squamatis; basi radiatim lamellato-striatā, circulariter medio valdē quinque-liratā, callo centrali albo.*

THE BROAD-SPINE TROCHUS. Shell imperforate, shortly conoid, ash-grey, freckled with bluish-olive and white; whorls sharply sloping, sprinkled with obliquely produced grains, transversely compressly prickly-scaled at the margin; base radiately lamellately striated, circularly strongly five-ridged in the middle, central callosity white.

PHILIPPI, Abbild. and Besch. Conch. vol. i. p. 92. pl. 3. f. 2.

Hab. West Indies.

Very like the preceding species in form and details of sculpture, but the colouring has a grey speckled character, and the central callosity of the base is white.

Species 41. (Mus. Cuming.)

TROCHUS **OLIVACEUS.** *Troch. testā imperforatā, turgido-conoideā, alveariiformi, virescente, olivaceo et ferrugineo-rufō tinctā et variegatā, ad marginem conspicuē flammātā; anfractibus ubique costellis rugiformibus obliquis sculptis, supernē tumidis, deinde concavis, margine acutangulo, obsolete squamato; basi valdē concavā, circa callositatem biliratā, liris granatis, callomitate excavatā, intensē sanguineā, medio purpurro-nigro tinctā.*

THE OLIVE TROCHUS. Shell imperforate, turgidly conoid, hive-shaped, greenish, stained and variegate with olive and rust-red, conspicuously flamed at the margin; whorls everywhere sculptured with fine oblique wrinkle-like ribs, swollen round the upper part, then concave sharply angled, and obsolete scaled at the margin; base very concave, two-ridged around the callosity, ridges grained, callosity excavated, deep blood-red, stained with purple-black in the middle.

WOOD, Ind. Test. Supp. pl. 5. f. 8.

Trochus erythrophthalmus, Philippi.

Hab. Panama, California.

Dr. Philippi is altogether wrong in his criticism (in Kuster, Conch. Cab. p. 215), on my figure of this species in Conch. Systematica, pl. 217, f. 7. The shell which I there figured twenty years ago I now figure again, and it is the true *T. olivaceus*, Wood, figured in the Supplement to Index Testaceologicus, on a much reduced scale. Dr. Philippi has mistaken Wood's reduced figure to represent the natural size of the shell, and re-produced it as such in his monograph; but there is a mark against Wood's figure to indicate that it is an inch and three-quarters long, the same mark as that attached to *T. undosus*, figured next but one to it. *T. olivaceus* is the shell which Dr. Philippi figures in Plate 45 of his monograph, with the expressive name of *T. erythrophthalmus*, after its principal characteristic, the blood-red basal callosity darkened in the middle with purple-black. In *T. Buschii* the shell is nearly alike, except that the basal callosity is white.

Species 42. (Mus. Cuming.)

TROCHUS BUSCHII. *Troch. testā imperforatā, turgido-conoidrā, virente, ferrugineo-rufa sparsim tinctā, olivaceo aspersā, interdum ad marginem flammātā; anfractibus ubique costellis rugiformibus obliquis sculptis; superne tumidis, deinde concavis, margine acutangulo, obsolete squamato; basi planatā, circa callositatem biliratā, callositate albā.*

BUSCH'S TROCHUS. Shell imperforate, turgidly conoid, green, sparingly stained with rust-red, sprinkled with olive, sometimes flamed at the margin; whorls everywhere sculptured with fine wrinkle-like ribs,

swollen round the upper part, then concave, sharply angled and obsoletely scaled at the margin; base flat, two-ridged around the callosity, callosity white.

PHILIPPI, Abbild. und Besch. Conch. vol. i. p. 90. pl. 2. f. 3, 4. Kuster, Conch. Cab. pl. 32. f. 1.

Hab. Panama.

There is little to distinguish this species on the upper surface of the shell from the preceding; but the base differs in being less concave with the ridges not granulated, and in the central callosity being without any indication of colour.

Species 43. (Mus. Cuming.)

TROCHUS TENTORIIFORMIS. *Troch. testā imperforatā, acutē conicā, flavido-spadiceā, roseo tinctā; anfractibus concavo-declivibus, obsolete granoso-corrugatis, undique obscure turgido-plicatis, margine acutangulo, infermi; basi concavo-excavatā, dense subtiliter imbricato-liratā.*

THE TENT-SHAPED TROCHUS. Shell imperforate, sharply conical, yellowish-fawn, tinged with rose; whorls concavely sloping, obsoletely granosely ridged, obscurely turgidly plicated throughout, margin sharply angled, smooth; base concavely excavated, densely finely imbricately ridged.

JONAS, Zeitschr. für Malac. 1845, p. 66.

Hab. Australia.

The base of this species is excavately concave, exquisitely finely imbricated throughout, tinged here and there with a faint blush of purple-rose on a rust-fawn ground.



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TROCHUS.

PLATE IX.

Species 44. (Mus. Cuming.)

TROCHUS ASTERISCUS. *Troch. testâ imperforatâ, sub-
acutè conicâ, flavescente-spadicâ; anfractibus obliquè
subobsoletè rugatis, ad marginem squamatis, squamis
magnis, fornicatis; basi convexo-planâ, liratâ, callo
centrali interdum roseo, interdum cœruleo-virente.*

THE ASTERISK TROCHUS. Shell imperforate, rather sharply
conical, yellowish-fawn; whorls obliquely somewhat
obsoletely wrinkled, scaled at the margin, scales
large, vaulted; base convexly flattened, ridged, cen-
tral callosity sometimes rose, sometimes blue-green.

REEVE, Pro. Zool. Soc. 1842, p. 184, Conch. Syst. pl.
217. f. 5.

Trochus stellatus? Gmelin.

Hab. Port Essington, Australia (on the reefs at low
water); Jukes.

The scales are, in this species, peculiarly vaulted at the
margin; and the basal callosity is either blue-green, as in
T. columellaris, or rose-red as in *T. rhodostoma*.

Species 45. (Mus. Cuming.)

TROCHUS TUBEROSUS. *Troch. testâ imperforatâ, subobtusè
conicâ, spadiceo-albâ; anfractibus irregulariter rudè
granatis et corrugato-plicatis, versus marginem biseri-
atim tuberculatis, tuberculis brevibus, erectis; basi
squamato-liratâ, callo livido-purpurascente.*

THE TUBEROUS TROCHUS. Shell imperforate, rather ob-
tusely conical, fawn-white; whorls irregularly rudely
grained and wrinkle-plaited, with a double row of
short erect tubercles at the margin; base scale-
ridged, callosity pale livid-purple.

PHILIPPI, Abbild. und Besch. Conch. vol. i. p. 69. pl. 2.
f. 11.

Hab. —?

The external sculpture of this species is not unlike that
of *T. calatus*, but the base partakes more of the cha-
racter of *T. rhodostoma*.

Species 46. (Mus. Cuming.)

TROCHUS URVILLEI. *Troch. testâ imperforatâ, obtusè
conoidè, tenuiculâ, cordatè albâ, ferrugineo-tinctâ; an-
fractibus concavo-declivibus, irregulariter granato-cor-
rugatis, ad marginem tenuè plicato-fimbriatis, fimbriâ*

*interdum obsoletâ; basi concavo-planatâ, subtiliter
squamato-liratâ.*

URVILLE'S TROCHUS. Shell imperforate, obtusely conoid,
rather thin, dead-white, tinged with rust; whorls
concavely sloping, irregularly grain-wrinkled, thinly
plicately frilled at the margin, frill sometimes obso-
lete; base concavely flattened, finely scale-ridged.

PHILIPPI, Küster, Conch. Cab. p. 215, pl. 32. f. 4.

Trochus fimbriatus, var., Quoy and Gaimard.

Hab. Sydney (in rocky places at low water); Jukes.

The margin of the whorls incline to become fimbriated,
and the species is carried by the gradually increasing de-
velopment of this character into *T. fimbriatus*, figured
below it.

Species 47. (Mus. Cuming.)

TROCHUS STELLATUS. *Troch. testâ imperforatâ, conoidè,
crassâ, purpurascendo-spadicâ; anfractibus obliquè
corrugato-liratis, ad marginem tuberculis squamatis
amplis subfimbriatis armatis; basi convexâ, densè im-
bricato-squamatâ.*

THE STAR TROCHUS. Shell imperforate, obtusely conoid,
thick, purplish-fawn; whorls obliquely wrinkle-
ridged, armed at the margin with large slightly fim-
briated squamate tubercles; base convex, densely
imbricately scaled.

CHEMNITZ, Conch. Cab. vol. v. p. 47. pl. 164. f. 1552.

Turbo stellaris, Gmelin.

Trochus stellaris, Lamarck.

Hab. New Caledonia.

This fine species is the representative in Australian
waters of the Philippine *T. calcar*.

Species 48. (Mus. Cuming.)

TROCHUS ROTULARIUS. *Troch. testâ imperforatâ, depressè
conoidè, calcareo-albâ, virescente pallidè tinctâ; an-
fractibus plano-declivibus, subcorrugatis, ad marginem
creberrimè compressè plicato-fimbriatis; basi convexâ,
densè imbricato-liratâ.*

THE WATER-WHEEL TROCHUS. Shell imperforate, de-
pressly conoid, chalk-white, faintly tinged with green;
whorls flatly sloping, slightly wrinkled, very closely
compressly plicately frilled at the margin; base con-
vex, densely imbricately ridged.

Uvanilla fimbriata, Adams.

Hab. Australia.

The marginal frill is so closely compressly puckered round the periphery of this species as to form a kind of ruff.

TROCHUS FIMBRIATUS. Troch. testā imperforatā, subdepressè conoideā, calcareo-albā; anfractibus plano-declivibus, obscurè corrugato-striatis, ad marginem plus minus ampliter expanso-fimbriatis; basi convexā, liratā, liris parum imbricatis.

THE FRILLED TROCHUS. Shell imperforate, rather depressly conoid, chalk-white; whorls flatly sloping, obscurely wrinkle-striated, more or less largely expandedly frilled at the margin; base convex, ridged; ridges but little imbricated.

AMARCK, Anim. sans vert. vol. ix. p. 195.

Uvanilla fimbriata, Adams.

ab. Australia.

the margin here, instead of being puckered vertically, as in the preceding species, is expanded horizontally.

TROCHUS UNGUIS. (Mus. Cuming.)

TROCHUS UNGUIS. Troch. testā imperforatā, subdepressè conoideā, purpurascēte-spadiceā; anfractibus convexo-declivibus, undique corrugato-liratis et striatis, ad marginem squamis fornicatis descendentibus radiatis; basi concaviusculā, densè minutè lamellato-imbricatā.

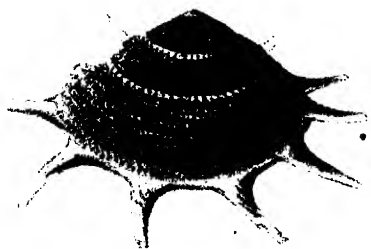
THE NAIL TROCHUS. Shell imperforate, rather broadly conoid, purplish-fawn; whorls convexly sloping, wrinkle-ridged and striated throughout, rayed at the margin with descending vaulted scales; base rather concave, densely minutely lamellately imbricated.

WOOD, Ind. Test. Supp. pl. 5. f. 2.

Uvanilla unguis, Adams.

ab. Panama, California.

A shell of lighter growth than *T. imbricatus*, more hollow and less imbricately ridged at the base; it is also differently coloured.



53.



54.



55.



56.

TROCHUS.

PLATE X.

Species 51. (Mus. Cuming.)

TROCHUS TRIUMPHANS. *Troch. testā callosio-umbilicatā, depresso-conoideā, purpureo-rufescente; anfractibus convexo-declivibus, granis conspicuè elevatis dense cingulatis, ad marginem spinis longissimis subdistantibus radiatis; aperturā parviusculā, labro sinuato.*

THE TRIUMPHANT TROCHUS. Shell callously umbilicated, depressly conoid, purplish-red; whorls convexly sloping, densely encircled with conspicuously raised grains, rayed at the margin with very long rather distant spines; aperture rather small, lip sinuated.

PHILIPPI, Fünft. Jah. des Ver. f. Naturk. p. 8.

Imperator Guildfordiæ, Gray.

Trochus Guildfordiæ, Reeve.

Guildfordia triumphans, Adams.

Hab. China, Japan.

This very elegant and rare species is singularly characterized by the marginal scales being developed into long radiating tubular spines.

Species 52. (Fig. a, b, Mus. Cuming.)

TROCHUS CALCAR. *Troch. testā imperforatā, subgloboso-conoideā, lutescente; anfractibus declivi-convexis, oblique rudè corrugatis, deinde tuberculis crassis radiceformibus ad extremitatem viridibus cingulatis; basi dense minutè muricato-squamosis; aperturā parviusculā, obliquā.*

THE SPUR TROCHUS. Shell imperforate, somewhat globosely conoid, yellowish; whorls slopingly convex, obliquely rudely wrinkled, then encircled with thick root-like tubercles, which are green at the extremity; base densely minutely prickly scaled; aperture rather small, oblique.

Turbo calcar, Linnæus, Syst. Nat. 10th edit. p. 762.

Trochus calcar, Chemnitz.

Calcar Spenglerianum, Chemnitz.

Trochus stella, Lamarck.

Stella calcar, Gray.

Hab. Philippine Islands; Cuming.

This well-known species, when in a fine state, has the root-like extremities of the tubercles painted with bright green.

Species 53. (Mus. Cuming.)

TROCHUS GYGILLUS. *Troch. testā imperforatā, conico-turbinatā, aurantio-roseā; anfractibus undiquè papillato-granatis, supernè depressè convexis, deinde biangulatis, ad angulos squamatis, squamis peculiariter latè expansis, suturis impressis; basi subconvexā, callo centrali chromo-aurantio; aperturā subobliquā.*

THE SPINNING-WHEEL TROCHUS. Shell imperforate, conically turbinated, orange-rose; whorls papillary-grained throughout, depressly convex at the upper part, then two-angled, scaled at the angles, scales peculiarly broadly expanded, sutures impressed; base rather convex, central callosity chrome-orange; aperture rather oblique.

Hab. China.

Very closely allied to *T. modestus*, but distinguished by a more square form, while the scales are curiously expanded.

Fig. 54. (Mus. Cuming.)

The shell here figured proves to be a fine specimen of *T. columellaris*, described at Plate VII. Sp. 33. The species may be readily distinguished by a conspicuous verdigris-blue callosity round the columella.

Species 55. (Mus. Cuming.)

TROCHUS SPINULOSUS. *Troch. testā imperforatā, depresso-conoideā, lutescente-spadiceā; anfractibus convexo-declivibus, oblique rudè granoso-corrugatis, ultimo ad marginem tuberculis spiniformibus erectis biserialim armato; basi planiusculā, dense muricato-squamatis; aperturā parvā.*

THE SPINED TROCHUS. Shell imperforate, depressly conoid, yellowish-bay; whorls convexly sloping, obliquely rudely granosely wrinkled, last whorl armed at the margin with two rows of erect spine-like tubercles; base rather flat, densely minutely prickly scaled; aperture small.

LAMARCK, Anim. sans vert. vol. ix. p. 127.

Hab. Philippine Islands.

The base of this species is armed with two rows of

TROCHUS.—PLATE X.

strong erect spine-like tubercles, of which the lower row are the smaller.

Species 56. (Mus. Cuming.)

TROCHUS MODESTUS. *Troch. testā imperforatā, conico-turbinatā, aurantio-roseā; anfractibus convexo-declivibus, deinde biseriatim squamatis, undique papillato-granatis; basi planiusculā, chromo-aurantio tinctā.*

THE MODEST TROCHUS. Shell imperforate, conically turbinated, orange-rose; whorls convexly sloping, then encircled with two rows of scales, papillary-grained throughout; base rather flat, tinged with chrome-orange.

REEVE, Pro. Zool. Soc. 1842, p. 185.

Hab. Japan.

Of a more slopingly conical form, more sharply scaled than *T. girgyllus*.



64



64 b



TROCHUS.

PLATE XI.

Species 57. (Mus. Cuming.)

TROCHUS DIMINUTIVUS. *Troch. testâ imperforatâ, minutâ, subabbreviato-conoideâ, fulvo-fuscâ; anfractibus declivi-convexis, spiraliter serialim granulatis; basi circulariter biliratâ, liris valinibus, subdistantibus.*

THE DIMINUTIVE TROCHUS. Shell imperforate, minute, somewhat shortly conoid, fulvous-brown; whorls slopingly convex, spirally serially granuled; base circularly two-ridged, ridges strong, rather distant.

Hab. Oahu Islands.

A small fulvous-brown, finely-granulated species, imperforate, and strongly two-ridged at the base.

Species 58. (Fig. 58 and 59, Mus. Cuming.)

TROCHUS AUREUS. *Troch. testâ superficialiter umbilicatâ, obtusè depressè conoideâ, interdum aureo-fulvâ, interdum olivaceo-virentè; anfractibus superne declivi-convexis, plicato-corrugatis, deinde validè granulatis, inferne obtusè angulatis, suturis impressis; basi regulariter granulâ.*

THE GOLDEN TROCHUS. Shell superficially umbilicated, obtusely depressly conoid, sometimes golden-fulvous, sometimes olive-green; whorls slopingly convex and plicately wrinkled at the upper part, then strongly grained, obtusely angled round the lower part, sutures impressed; base regularly grained.

JONAS, Zeitschr. für Malac. 1844, p. 168.

Hab. New Holland.

The accompanying figures represent two well-marked varieties of this species, one olive-green, the other of a bright golden-fulvous colour.

Species 60. (Mus. Cuming.) *

TROCHUS SQUAMIFERUS. *Troch. testâ imperforatâ, obtusè depresso-conoideâ, fuscescente-albâ; anfractibus convexis, undiquè plicato-corrugatis et squamatis, ad marginem rudè expanso-fimbriatis; basi plano-convexâ, squamato-lirâtâ.*

THE SCALY TROCHUS. Shell imperforate, obtusely depressly conoid, brownish-white; whorls convex, obliquely plicately wrinkled and scaled throughout,

rudely expandedly fimbriated at the margin; base flatly convex, scale-ridged.

Koch, in Phil. Abbild. und Besch. Conch. pl. 4. f. 9.

Trochus fimbriatus, var. Philippi.

Hab. — ?

This appears to me to be constantly distinguished from *T. fimbriatus*, in the manner shown by our respective figures of the two species.

Species 61. (Mus. Cuming.)

TROCHUS HEXAGONUS. *Troch. testâ imperforatâ, subobtusè conicâ, albâ, aureo-ferruginea tinctâ; anfractibus concavo-declivibus, rudè plicato-corrugatis et malleatis, deinde obtusè tuberculatis; basi planiusculâ, deorsum irregulariter squamatâ.*

THE HEXAGONAL TROCHUS. Shell imperforate, rather obtusely conical, white, tinged with golden-rust; whorls concavely sloping, rudely plicately wrinkled and malleated, then obtusely tubercled; base rather flat closely irregularly scaled.

PHILIPPI, in Kuster, Conch. Cab. p. 130. pl. 22. f. 9.

Hab. Australia.

With somewhat of the form of *T. rhodostoma*, but the sculpture is of a ruder and more obtuse character, and there is no indication of colour about the basal callosity.

Species 62. (Mus. Cuming.)

TROCHUS ACULEATUS. *Troch. testâ imperforatâ, conicâ, aurantio-apicicâ; anfractibus declivi-convexis, obliquè corrugato-plicatis, plicis subamplis, tumidis, anfractuum margine basali mucicato-squamato; basi circa callositale squamato-lirâtâ.*

THE PRICKLY TROCHUS. Shell imperforate, conical, orange-drab; whorls slopingly convex, obliquely wrinkle-plaited, plaits rather large, swollen, basal margin of the whorls prickly-scaled, base scale-ridged around the callosity.

Hab. — ?

A richly coloured species, of a bright orange-drab colour, with the characters well defined.

Species 63. (Mus. Cuming.)

TROCHUS TUBER. *Troch. testâ imperforatâ, conoideo-turbinatâ, fusco et viridi variegatâ; anfractibus decliviconvexis, deinde rotundatis, oblique costatis et granulatis, costis amplis, tumidis, obsolete tuberculatis; basi convexo-planâ, levigatâ.*

THE TUBER TROCHUS. Shell imperforate, conoidly turbinated, variegated with brown and green; whorls slopingly convex, then rounded, obliquely ribbed and granulated, ribs large, swollen, obsoletely tubercled; base convexly flattened, smooth.

LINNEÆUS, Syst. Nat. p. 1230.

Lithopoma tuber, Gray.

Hab. West Indies.

This well-known species is not from the Mediterranean, as stated by Linnæus, but from the West Indies.

Fig. 64. (Fig. a, b, Mus. Cuming.)

TROCHUS STELLATUS. *Troch. testâ imperforatâ, conicâ, olivaceo-virente; anfractibus convexo-declivibus, subtiliter plicato-corrugatis, ad marginem oblique squamato-tuberculatis; basi plano-convexâ, minutè confertim squamato-striatâ, callositate æuco-cærulescente.*

THE STARRED TROCHUS. Shell imperforate, conical, olive-green; whorls convexly sloping, faintly plicately wrinkled, obliquely scale-tubercled at the margin;

base flatly convex, minutely closely scale-striated, callosity verdigris-blue.

GMELIN, Syst. Nat. p. 3600.

Hab. — ?

It is scarcely possible to determine exactly which species is Gmelin's *T. stellatus*, but this appears to be the shell assigned to it by Philippi at pl. 21. f. 4 of his monograph. The tubercular scales are sometimes prominent, sometimes almost obsolete.

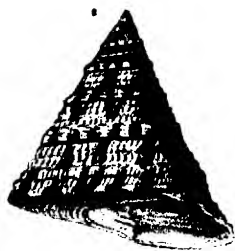
Species 65. (Mus. Cuming.)

TROCHUS LAPILLUS. *Troch. testâ imperforatâ, obtusè turbinatâ, fulvescente, ad basin rufescente tinctâ; anfractibus juxta suturas depressè declivibus, deinde tumido-rotundatis, longitudinaliter rudè costatis, costis irregulariter corrugatis et tuberculatis; basi convexâ, confertissimè irregulariter squamatâ.*

THE LITTLE STONE TROCHUS. Shell imperforate, obtusely turbinated, fulvous, tinged with red at the base; whorls depressly sloping next the suture, then tumidly rounded, longitudinally rudely ribbed, ribs irregularly wrinkled and tubercled; base convex, very closely irregularly scaled.

Hab. — ?

Sculptured in a very rude and irregular manner, and allied in general character to *T. calcar*.



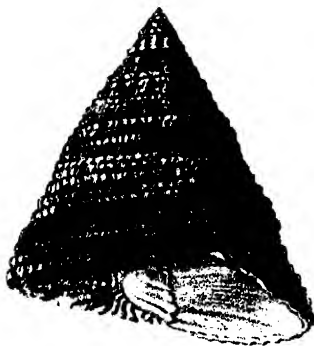
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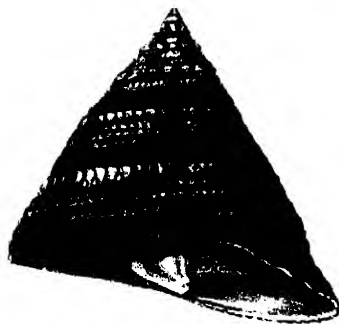
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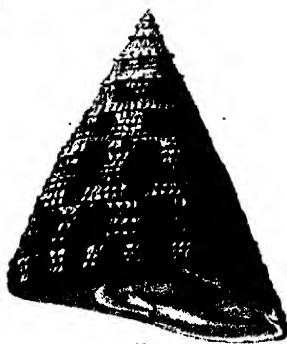
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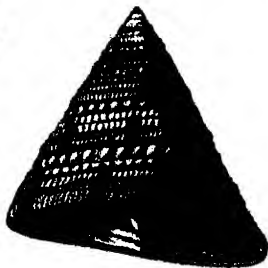
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71



72

TROCHUS.

PLATE XII.

Species 66. (Mus. Cuming.)

TROCHUS SMARAGDUS. *Troch. testā angustē excavato-umbilicatā, acutē conicā, albidā, obliquē viridi strigatā, geminis perpaucis rufis cinctā; anfractibus plano-declivibus, undique spiraliter validē granatis, ad marginem subobsoletē plicato-nodulatis; basi planā, granulato-liratā, maculis elongatis lilacino-roseis pallidē tinctā.*

THE EMERALD TROCHUS. Shell narrowly excavately umbilicated, sharply conical, white, obliquely green-streaked, encircled with a few red beads; whorls flatly sloping, spirally strongly grained throughout, faintly obliquely noded at the margin; base flat, grain-ridged, delicately tinged with lilac-rose elongated spots.

Hab. — ?

I am quite unable to identify this with any named species. The characters are very clearly defined.

Species 67. (Mus. Cuming.)

TROCHUS GIBBERULUS. *Troch. testā excavato-umbilicatā, obeso-conicā, atreariiformi, crassā, olivaceo-albā, pallidē olivaceo longitudinaliter flammātā, flammis ad basin cvidē roseis, lineolatis; anfractibus convexis, validē spiraliter granatis, granis hic illic plicato-nodosis; basi confertissimē grano-liratā.*

THE SWOLLEN TROCHUS. Shell excavately umbilicated, stoutly conical, hive-shaped, thick, olive-white, longitudinally flamed with pale olive, flames at the base bright rose, and lineolate; whorls convex, strongly spirally grained, grains here and there plicately noded; base very closely grain-ridged.

Polydonta gibberula, Adams, Pro. Zool. Soc. 1851, p. 155.
Hab. Philippine Islands.

The colouring of this exquisite species is very peculiar. It is faintly tinged with olive flames, which on passing to the base are suddenly changed to a bright crimson-rose:

Species 68. (Mus. Cuming.)

TROCHUS INCARNATUS. *Troch. testā excavato-umbilicatā, acutē conicā, fuscescente-albā vel carneā, olivaceo et*

rufa maculatā; anfractibus spiraliter nodoso-liratis, nodis ad basin prominentioribus, interstitiis corrugato-clathralis; basi subplanulatā, purpureo pallidē punctatā, confertim grano-liratā.

THE FLESH-TINTED TROCHUS. Shell excavately umbilicated, sharply conical, brownish-white or flesh-tinged, spotted with olive and red; whorls spirally nodosely ridged, nodules more prominent at the base; base rather flat, faintly dotted with purple, closely grain-ridged.

PHILIPPI, Zeitsch. für Malak. 1846, p. 103.

Hab. — ?

The sculpture of this species is peculiar, in being for the most part strongly nodularly grained, with the interstices quite wrinkle-latticed.

Fig. 43 and 4 c. (Mus. Cuming.)

For description of this species, *T. maculatus*, see Plate I. species 4.

Species 69. (Mus. Cuming.)

TROCHUS VIRGATUS. *Troch. testā imperforatā, elato-conicā, subatreariiformi, virescente, maculis purpureis amplis tessellatim virgatā; anfractibus declivi-con-
vexis, undique validē spiraliter grano-liratis; basi plano-concavā, circulariter granatā, intensē roseo profusē lineari-maculatā.*

THE STRIPED TROCHUS. Shell imperforate, elevatedly conical, somewhat hive-shaped, greenish, tessellately striped with large purple blotches; whorls slopingly convex, strongly spirally grain-ridged throughout; base flatly concave, circularly grained, profusely linearly spotted with deep rose.

Gmelin, Syst. Nat. p. 3580.

Hab. Philippine Islands.

Very sharply angled round the basal margin, the base being distinctly concave and profusely painted with bright purple-rose linear spots.

Species 70. (Mus. Cuming.)

TROCHUS FLAMMULATUS. *Troch. testā excavato-umbili-*

TROCHUS.—PLATE XII.

catâ, sublatè conicâ, pallidè carneâ, rufescente sparsim flammâtâ; anfractibus plano-declivibus, juxta suturas perampliter granatis, deinde obliquè tenuè corrugatis et spiraliter lineari-sulcatis; basi concavo-planâ, circulariter corrugato-lirâtâ.

THE FLAMED TROCHUS. Shell excavately umbilicated, rather broadly conical, pale flesh-colour, sparsely flamed with red; whorls flatly sloping, very largely grained next the sutures, then obliquely finely wrin-

kled and spirally linearly grooved; base concavely flattened, circularly wrinkle-ridged.

LAMARCK, Anim. sans vert. vol. xi. p. 138.

Hab. —?

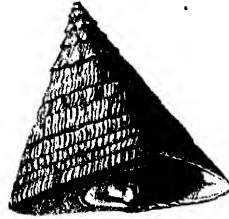
The sculpture of this species consists of an unusually large row of granules next the sutures, and a multitude of fine oblique wrinkles, occupying the place of granules, below them.



71.



72.



74.



76.



73.



77.

Vincere Brooks, frop

Sowby, del. a. h. h.

TROCHUS.

PLATE XIII.

Species 71. (Mus. Cuming.)

TROCHUS NIGROPUNCTATUS. *Troch. testâ subampliter excavato-umbilicatâ, abbreviatâ-conicâ, cinereo-virente, nigro obliquè flammâtâ; anfractibus plano-concavis, granis regularibus spiraliter confertissimè gemmatis; basi grano-lirâtâ, interstitiis crispato-decussatis, liris nigro-punctatis, punctis conspicuis, distantibus.*

THE BLACK-DOTTED TROCHUS. Shell rather largely excavately umbilicated, shortly conical, ash-green, obliquely flamed with black; whorls flatly convex, spirally very closely gemmed with regular grains; base grain-ridged, interstices crispatly decussated, ridges dotted with black, dots conspicuous, distant.

Hab. Natal.

The surface of this species is grained with unusual regularity, and the base is very characteristically sprinkled at rather distant intervals with blue-black dots. Dr. Philippi has figured this species, by mistake, both in his 'Abbildungen' and in Küster's *Conch. Cab.* for our *T. Hauleyanus*, which is *T. lineatus*, Lamarck.

Species 72. (Mus. Cuming.)

TROCHUS VIVIDUS. *Troch. testâ excavato-umbilicatâ, abbreviatâ-conicâ, viridè viridi, corallo-rubro viridè flammâtâ; anfractibus concavo-declivibus, regulariter spiraliter granatis, granis subamplis, obliquis, interstitiis crispato-corrugatis, granis juxta suturas plicato-nodatis; basi plano-concavâ, grano-lirâtâ, liris alternatim majoribus, virescentè, punctis minutis rufis lentiginosâ.*

THE BRIGHT TROCHUS. Shell excavately umbilicated, shortly conical, bright green, brightly flamed coral-red; whorls concavely sloping, regularly spirally grained, grains rather large, oblique, interstices crispatly wrinkled, grains next the sutures plicately noded; base flatly concave, grain-ridged, ridges alternately larger, greenish, freckled with minute red dots.

Hab. — ?

A solid brightly coloured species, allied in general aspect to *T. cariniferus*, Beck.

Species 73. (Mus. Hanley.)

TROCHUS CALICOCOCUS. *Troch. testâ angustè excavato-umbilicatâ, acutè depresso-conoidè, virescente-olivaceâ, sordidè purpureo-rufa grandimaculatâ; anfractibus plano-concavis, spiraliter conspicuè papillari-granatis, ad marginem plicato-nodatis; basi plano-concavâ, regulariter grano-lirâtâ, punctis lilacino-rufis pallidè aspersâ.*

THE HANDSOME-GRAINED TROCHUS. Shell narrowly excavately umbilicated, sharply depressly conoid, greenish-olive, large-spotted with dingy purple-red; whorls flatly concave, spirally conspicuously papillary grained, plicately noded at the margin; base flatly concave, regularly grain-ridged, faintly sprinkled with lilac-red dots.

Hab. — ?

Very largely papillary grained, and plicately noded at the edge, the nodules taking the form of prickly radiations.

Species 74. (Mus. Cuming.)

TROCHUS TABIDUS. *Troch. testâ imperforatâ, acutè depresso-conoidè, cinereo-albâ; anfractibus plano-declivibus, obliquè irregulariter rugatis, vixus apicem tuberculatis; basi plano-concavâ, subobsolete sulcatâ, columellâ callosò-contortâ.*

THE CONSUMPTIVE TROCHUS. Shell imperforate, sharply depressly conoid, ash-white; whorls flatly sloping, obliquely irregularly wrinkled, tubercled towards the apex; base flatly convex, rather obsoletely grooved, columella callously twisted.

Hab. Australia.

Partaking of the general character of *T. pyramis* and *noduliferus*.

Species 75. (Mus. Cuming.)

TROCHUS OBESUS. *Troch. testâ excavato-umbilicatâ, obso-conicâ, albidâ, viridè tinctâ, vixus basin olivaceo interruptè flammâtâ; anfractibus convexiusculis, obsolete granulatâ, ad marginem plicato-nodatis; basi concaviusculâ, obsolete granulatâ.*

THE STOUT TROCHUS. Shell excavately umbilicated, stoutly conical, whitish, tinged with green, inter-

ruptedly flamed towards the base with olive; whorls rather convex, obsoletely granuled, plicately noded at the margin; base rather convex, obsoletely granuled.

Hab. — ?

Of a ...

Species 76. (Mus. Cuming.)

TROCHUS LACINIATUS. *Troch. testā excavato-umbilicatā, subacutē conicā, viridī, purpureo-fusco inquinatā; anfractibus subconcavo-planatis, regulariter spiraliter granulatis, ad marginem nitidē plicato-tuberculatis, tuberculis descendētib; basi planā, grano-liratis, liris subdistantibus.*

THE FRINGED TROCHUS. Shell excavately umbilicate, rather sharply conical, green, stained with purple-brown; whorls rather concavely flattened, regularly spirally granulated, neatly plicately tubercled at the margin, tubercles descending; base flat, grain-ridged, sides rather distant.

A very neatly sculptured green shell, faintly bronzed

Species 77. (Mus. Hanley.)

TROCHUS INCRASSATUS. *Troch. testā subprofundē excavato-umbilicatā, obtusē conicā, crassā, virescente-albā, sordidē purpureo vel olivaceo latē tessellato-flammulatā; anfractibus subplanatis, spiraliter lineariter sulcatis, interstitiis obliquē granatis, suturis impressis; basi convexo-planā, granis undique gemmatā, profusē flammulatā.*

THE THICKENED TROCHUS. Shell rather deeply excavately umbilicate, obtusely conical, thick, greenish-white, broadly tessellately flamed with dingy-purple or olive; whorls rather flat, spirally linearly grooved, interstices obliquely grained, sutures impressed; base convexly flat, gemmed with grains throughout, profusely flamed.

LAMARCK, Anim. sans vert. vol. ix. p. 138.

Hab. — ?

Of solid, rather obtuse growth, broadly flamed with olive passing into dingy-purple.



78



79 b



80



81



82



83 a



83 b



84



85

TROCHUS.

PLATE XIV.

Species 78. (Mus. Cuming.)

TROCHUS SACELLUM. *Troch. testā modicè excavato-umbilicatā, conoideā, solidā, corallo-rubrā vel lutescente, rufo marmoratā; anfractibus planulatis, triseriatim papillari-granatis, ad marginem spinoso-nodatis, nodis bisectis; basi convexiusculā, circulariter grano-liratā, interstitiis circulariter striatis.*

THE TEMPLE TROCHUS. Shell moderately excavately umbilicated, conoid, solid, coral-red or yellowish, marbled with red; whorls rather flattened, encircled with three rows of papillary grains, spinosely noded at the margin, nodules bisected; base a little convex, circularly grain-ridged, interstices circularly striated.

PHILIPPI, in Küster, Conch. Cab. p. 309. pl. 44. f. 13.

Hab. Island of Luzon, Philippines (on the reefs at low water); Cuming.

Of this species we have figured a more characteristic specimen in the next Plate, fig. 93. The shell represented in our present Plate is of a deep coral-red; the other, which agrees better with Dr. Philippi's figure, is of a warm fawn-yellow, marbled with paler scarlet-red.

Species 79. (Fig. *a, b*, Mus. Cuming.)

TROCHUS VIRIDIS. *Troch. testā excavato-umbilicatā, conicā, viridescens; anfractibus seriatim plicato-granatis, granis nunc parvis, obtusis, nunc majoribus, paucioribus, subspinosis; basi plano-concavā, circulariter striatā.*

THE GREEN TROCHUS. Shell excavately umbilicated, conical, green; whorls seriatly plicately grained, grains sometimes small, obtuse, sometimes larger, fewer, and somewhat spinous; base flatly concave, circularly striated.

GMELIN, Syst. Nat. p. 3572.

Hab. New Zealand.

Our figures of this species illustrate its extreme varieties; one, in which the granules are small and obtuse, the other, in which they are large, fewer in number, and spinous.

Species 80. (Mus. Cuming.)

TROCHUS RADIATUS. *Troch. testā excavato-umbilicatā,*

depresso-conicā, albidā, purpureo-rufo obliquè radiatā; anfractibus convexiusculis, triseriatim nodoso-granatis, interstitiis obliquè corrugato-striatis, marginè biseriatis granulatis; basi planiusculā, rufo-punctatā, circulariter liratis, liris obsolete granatis, interstitiis circulariter striatis.

THE RAYED TROCHUS. Shell excavately umbilicated, depressly conical, whitish, obliquely rayed with purple-red; whorls rather convex, encircled with three rows of nodose granules, interstices obliquely wrinkle-striated, margin encircled with two rows of smaller grains; base rather flat, red-dotted, circularly ridged, ridges obsolete granuled, interstices circularly striated.

GMELIN, Syst. Nat. p. 3572.

Hab. — ?

An extremely variable species, in which the purple-red flames are mostly broader and more conspicuous than in the specimen figured in the accompanying Plate. Chemnitz gives three characteristic varieties at pl. 160, figs. 1640, 1641, and 1642.

Species 81. (Mus. Cuming.)

TROCHUS TENEBRICUS. *Troch. testā excavato-umbilicatā, conicā, solidiusculā, viridī et ferrugineo-fuscā; anfractibus convexiusculis, spiritaliter undiquè obliquè rotundis granatis, margine basali rotundato, anfractuum margine versus apicem subtuberculato; basi convexiusculā, densè grano-liratā, rufo minutè punctatā.*

THE DINGY TROCHUS. Shell excavately umbilicated, conical, rather solid, green and rust-brown; whorls rather convex, spirally obliquely strongly grained throughout, basal margin rounded, margin of the whorls towards the apex slightly tubercled; base rather convex, densely grain-ridged, minutely dotted with red.

Hab. — ?

A solid and rather dingy-coloured shell, though prettily dotted with red at the base.

Species 82. (Mus. Cuming.)

TROCHUS TEXTILIS. *Troch. testā excavato-umbilicatā, umbilicatè conoideā, rosaceo-fuscescente, nigro sparsim lenti-*

ginnosa; anfractibus concavo-planatis, spiraliter subtiliter granulatis, margine basali rotundato; basi convexiusculâ, lirata, liris lævibus, alternatim majoribus, purpureo-rufis profuse punctatis.

THE EMBROIDERED TROCHUS. Shell excavately umbilicated, rather broadly conoid, pinkish-brown, sparingly freckled with black; whorls concavely flattened, finely spirally granulated, basal margin rounded; base rather concave, ridged, ridges smooth, alternately larger, profusely dotted with purple-red.

Hab. Cape of Good Hope.

Of a sombre rose-brown hue, freckled with an irregular network of black, the base of the shell being profusely dotted with a rich purple-red.

Species 83. (Fig. *a*, Mus. Cuming; fig. *b*, Mus. Hauley.)

TROCHUS EUSTEPHES. *Troch. testâ excavato-umbilicatâ, depressâ conoidâ, solidiusculâ, albidâ, rosæo-rubro profuse lineatâ et variegatâ; anfractibus undique conspicue verrucoso-granatis, granis juxta suturas peramplis, oblique plicatis, granis ad marginem basalem apertis, subtubulosis; basi undique confertim gemmatâ, rosæo maculatâ.*

THE PRETTILY-CROWNED TROCHUS. Shell excavately umbilicated, depressly conoid, rather solid, whitish, profusely stained and variegated with rose-red; whorls conspicuously wart-grained throughout, grains next the suture very large and obliquely plicated, grains at the basal margin open, subtubulous; base closely beaded throughout, rose-spotted.

PHILIPPI, Zeitschr. für Malac. 1849, p. 153.

Hab. West Indies.

This exquisitely carved species presents a curious characteristic in having the lower row of grains in each whorl open and apparently tubular. The grains throughout have an irregularly swollen wart-like aspect.

Species 84. (Mus. Cuming.)

TROCHUS MURREUS. *Troch. testâ excavato-umbilicatâ, subdepressâ conoidâ, spadiceo-albâ, nitente, lineis perpaucis purpureo-rufis cingulatâ; anfractibus supernè lævibus aut sparsim rugatis, infernè tuberculatis, tuberculis papillaribus, minutè apertis, subtubulosis; basâ concavo-planâ, liratâ, liris et interstitiis obtusè granulatis.*

THE PORCELAIN TROCHUS. Shell excavately umbilicated, rather depressly conoid, drab-white, shining, encircled with a few crimson lines, whorls smooth or sparsely wrinkled round the upper part, tubercled at the lower, tubercles papillary, minutely open, subtubulous; base concavely flattened, ridged, ridges and interstices obtusely granuled.

Hab. — ?

Of a dull stone-white colour, sparingly spirally veined with fine crimson lines.

Species 85. (Mus. Cuming.)

TROCHUS SUGILLATUS. *Troch. testâ excavato-umbilicatâ, subdepressâ conicâ, virescente et luteâ, maculis grandibus nigricante-olivaceis radiatâ; anfractibus undique confertim spiraliter granatis, granorum seriebus alternatim majoribus; basi convexiusculâ, circulariter liratâ, liris alternatim majoribus, purpureo profuse punctatâ.*

THE BRUISED TROCHUS. Shell excavately imbricated, rather depressly conical, green and yellow, rayed with large dark olive square spots; whorls closely spirally grained throughout, rows of grains alternately larger; base slightly convex, circularly ridged, ridges alternately larger, profusely dotted with purple.

Hab. — ?

The ridges of grains are alternately larger and smaller, and the same character attaches to the ridges of the base.



87



88a



89



90



91a



91b



92



93



94

TROCHUS.

PLATE XV.

Species 86. (Mus. Cuming.)

TROCHUS PUSTULOSUS. *Troch. testâ excavato-umbilicatâ, elato-conicâ, sordidè albâ, rosaceo-cornuâ variegatâ; anfractibus superne reticulato-granosis, deinde papillis prominentibus apertis fimbriatis; basi convexo-planâ, validè reticulato-granosa.*

THE PUSTULED TROCHUS. Shell excavately umbilicated, elevately conical, dead-white, variegated with pinkish flesh-colour; whorls reticulately grained round the upper part, then fringed with prominent open papillæ; base convexly flattened, strongly reticulately grained.

PHILIPPI, Zeitschr. für Malac. 1849, p. 188.

Polydonta Ticaoica, Adams.

Hab. Island of Ticao, Philippines; Cuming.

Of a lofty conical form, encircled throughout with a fringe of conspicuous decumbent open papillæ.

Species 87. (Mus. Cuming.)

TROCHUS FASTIGIATUS. *Troch. testâ imperforatâ, elato-conicâ, corallo-rubro et albo tessellatim virgatâ; anfractibus concavo-declivibus, quadriseriatim granatis, ad marginem radiatim muricato-tuberculatis; basi planulatâ, tenuiliratâ, roseo punctatâ.*

THE ELEVATED TROCHUS. Shell imperforate, elevately conical, tessellately striped with coral-red and white; whorls concavely sloping, encircled with four rows of granules, radiately prickly tubercled at the margin; base rather flat, finely ridged, dotted with rose.

ADAMS, Pro. Zool. Soc. 1851, p. 150.

Hab. — ?

Broadly tessellately striped with deep coral-red and white, but the red predominates.

Species 88. (Mus. Cuming.)

TROCHUS CUMINGII. *Troch. testâ imperforatâ, elato-conicâ, fulvescente-spadiceâ, intensè purpureo-roseo fasciatâ et tessellatâ; anfractibus concavo-declivibus, nitidè seriatim granulatis, ad marginem tuberculis apertis papillæformibus fimbriatis; basi planulatâ, granoliralâ, roseo punctatâ.*

CUMING'S TROCHUS. Shell imperforate, elevately conical, fulvous-drab, banded and tessellated with deep pur-

ple-rose; whorls concavely sloping, neatly serially granuled, fringed at the edge with open papilla-like tubercles; base rather flat, grain-ridged, dotted with rose.

ADAMS, Pro. Zool. Soc. 1851, p. 150.

Hab. Sibonga, Island of Zebu, Philippines (under stones at low water); Cuming.

Very like the preceding species in general appearance, but the sculpture more resembles that of *T. pustulosus*.

Species 89. (Mus. Cuming.)

TROCHUS CREBRIGRANATUS. *Troch. testâ modicè excavato-umbilicatâ, elato-conicâ, pyramidalî, spadiceo-albâ, auranio-ferrugineo subobscurè variegatâ; anfractibus confertissimè irregulariter verrucoso-granatis, ad marginem latè obliquè plicatis; basi convexiusculâ, validè circulariter granatâ.*

THE CLOSE-GRAINED TROCHUS. Shell moderately excavately umbilicated, elevately conical, pyramidal, fawn-white, rather obscurely variegated with orange-rust; whorls very closely irregularly wart-grained, broadly obliquely plicated at the margin; base rather convex, strongly circularly grained.

Hab. — ?

Characterized by the grained sculpture being swollen and wart-like, and very close packed, while the plicated margin forms a rather broad square edge.

Species 90. (Mus. Cuming.)

TROCHUS HISTRIO. *Troch. testâ excavato-umbilicatâ, acutè conicâ, virescente-albâ, intensè purpureo conspicuè tessellatim virgatâ; anfractibus concavo-declivibus, rudè verrucoso-granatis, ad marginem nodoso-tuberculatis, tuberculis granatis; basi validè seriatim granatâ, purpureo-roseo maculatâ.*

THE HARLEQUIN TROCHUS. Shell excavately umbilicated, sharply conical, greenish-white, conspicuously tessellately striped with dark-purple; whorls concavely sloping, rudely wart-grained, nodosely tuberculated at the margin, tubercles grained; base strongly serially grained, spotted with purple-rose.

Hab. — ?

Very closely allied to *T. sacellum*, but of a more sharply conical form, more strongly tubercled.

Species 91. (Fig. a, b, Mus. Cuming.)

TROCHUS TRICATENATUS. *Troch. testā excavato-umbilicatā, subobtusē conicā, solidā, interdum fulvescente-albā, roseo-flammātā, interdum virescente, cinereo-olivaceo flammātā; anfractibus supernè et infernè angustè tricolentis, medio validè triseriatim granatis, margine basali rotundato; basi convexiusculā, confertim seriatim granatā, sparsim maculatā.*

THE THREE-CHAINED TROCHUS. Shell excavately umbilicated, rather obtusely conical, solid, sometimes fulvous-white, flamed with rose, sometimes greenish flamed with ash-olive; whorls narrowly three-chained at the upper and lower parts, encircled round the middle with three rows of strong grains, basal margin rounded; base rather convex, closely serially grained, sparsely spotted.

Hab. — ?

The whorls of this species are encircled with three rows of bold wart-like grains, bound above and below by a narrow transversely stretched chain.

Species 92. (Mus. Cuming.)

TROCHUS PALLIDULUS. *Troch. testā modicè excavato-umbilicatā, subobovo-conicā, solidā, fulvescente-albā, immaculatā; anfractibus validè papillari-granatis, granis juxta suturas confertioribus, subplicatis; basi convexiusculā, seriatim granatā.*

THE PALE TROCHUS. Shell moderately excavately umbilicated, rather stoutly conical, solid, fulvous-white, unspotted; whorls strongly papillary grained, grains next the sutures closer, subpliate; base rather convex, serially grained.

Polydonta pallidula, Adams, Pro. Zool. Soc. 1851, p. 175.

Hab. — ?

Resembling in general aspect the obese grained forms of *Littorina*.

Species 93. (Mus. Cuming.)

The shell here figured is a characteristic type of Dr. Philippi's *T. sacellum*, of which we have given a smaller coral-red variety in the preceding Plate.

Species 94. (Mus. Cuming.)

TROCHUS METALLICUS. *Troch. testā subangustè umbilicatā, acutè conicā, æneo-virente, purpureo sparsim punctatā; anfractibus undique granatis, granis medianis regularibus, superioribus obliquè plicatis, inferioribus parvis, confertis; basi plano-concavā, seriatim granatā.*

THE METALLIC TROCHUS. Shell rather narrowly umbilicated, sharply conical, metallic-green, sparsely dotted with purple; whorls grained throughout, middle grains regular, upper grains obliquely plicated, lower grains small, close-set; base flatly concave, serially grained.

Hab. — ?

The colour of this species is a peculiar verdigris-green, imparting a metallic hue to the shell. The purple colour is sprinkled in small promiscuous blotches.



96a



96a



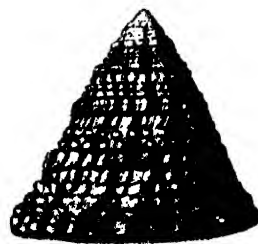
96b



95b



97



98



94a



95c



99b



95d

TROCHUS.

PLATE XVI.

Species 95. (Fig. a, b, c, d, Mus. Cuming.),

TROCHUS PUNCTULATUS. *Troch. testā ovato-conicā, imperforatā, ferrugineo-albā, rufo alboque serialim punctatā, anfractibus septem, declivi-rotundatis, granulis undique serialim gemmatis, ad suturas angustè canaliculato-impressis; aperturā obliquè ovalē, sub-circulari.*

THE DOTTED TROCHUS. Shell ovately conical, imperforate, rust-white, dotted in rows with red and white, whorls seven, slopingly rounded, gemmed throughout with rows of granules, narrowly canaliculately impressed at the sutures; aperture obliquely ovate, nearly circular.

MARTYN, Universal Conch. pl. 36.

Trochus diaphanus, Gmelin.

Turbo punctulatus, Gmelin.

Modiolus punctulatus, Gray.

Hab. New Zealand.

The accompanying figures of this species represent the varieties in which the granulation is sometimes smaller, sometimes larger, and the larger the sculpture is the darker is the painting and ground colour of the shell.

Species 96. (Fig. a, b, Mus. de Burgh.)

TROCHUS ELEGANTULUS. *Troch. testā subabbreviato-conicā, coccineo-roseo et albo variegatā, prope suturas cinereo-fusca, anfractibus ventricosu-rotundatis, corrugato-tuberculatis, granis fortibus undique densè serialim gemmatis.*

THE ELEGANT TROCHUS. Shell rather shortly conical, variegated with white and scarlet rose, ash-brown near the sutures, whorls ventricosely rounded, wrinkle-tubercled, densely gemmed throughout with rows of strong grains.

WOOD, Ind. Test. Suppl. p. 16, pl. 5, f. 9.

Hab. Ceylon.

A beautifully-grained species richly marbled with crimson-rose and white, conspicuously characterized by the roundness of the whorls, which are tubercled in a wrinkled manner.

Species 97. (Mus. de Burgh.)

TROCHUS GRANOSUS. *Troch. testā latè conicā, acutā, flavescens-albā, intensè viridi copiosè flammalā, anfractibus declivibus, validè verrucoso-granatis, granis*

irregularibus; basi circulariter granatā et viridi fulguratā.

THE GRAINED TROCHUS. Shell broadly conical, sharp, yellowish-white, copiously flamed with dark-green, whorls sloping, strongly wart-grained, grains irregular; base circularly grained, lightning-marked with green.

LAMARCK, Anim. sans vert. vol. 9, p. 137.

Hab. —?

This may probably be only a variety of *T. maculatus*, but it is very far removed from the type of that species.

Species 98. (Mus. Cuming.)

TROCHUS OBLITUS. *Troch. testā latè pyramidal-conicā, albā, olivaceo et virescente variegatā, versus apicem roseo maculatā, anfractibus concavo-declivibus, granatis, ad marginem inferiorem tuberculatis, granis amplis, subdistantibus; basi medio ampliter excavatā, circulariter grano-linatā, liris subdistantibus.*

THE FORGOTTEN TROCHUS. Shell broadly pyramidally conical, white, variegated with olive and pale-green, blotched towards the apex with rose, whorls concavely sloping, grained, tubercled at the lower margin, grains large, rather distant; base largely excavated in the middle, circularly grain-ridged, ridges rather distant.

Hab. —?

I am quite unable to refer this shell, after a multitude of comparisons, with any described species.

Species 99. (Fig. a, b, Mus. Cuming.)

TROCHUS VENETUS. *Troch. testā abbreviato-conicā, albidā, roseo lentiginosā, virescente et purpureo flammalā, anfractibus densè granatis, granis inferioribus parvis, moliformibus; basi medio ampliter excavatā, circulariter superficialiter linatā, levigatā, conspicuè flammalā.*

THE DYED TROCHUS. Shell shortly conical, whitish, freckled with rose, flamed with light green and purple, whorls densely grained, lower grains small, necklace-like; base largely excavated in the middle, circularly superficially ridged, smooth, conspicuously flamed.

Hab. Moluccas.

The upper surface of this species is grained, but the base is smooth.

TROCHUS.

	Plate.	Species.		Plate.	Species.
<i>aculeatus, Reeve</i>	XI.	62	<i>gigas, Anton</i>	V.	26
<i>acutangulus, Chemnitz</i>	II.	7	<i>girgyllus, Reeve</i>	X.	53
<i>acutus, Lamarck</i>	IV.	20	<i>granosus, Lamarck</i>	XVI.	97
<i>altus, Philippi</i>	III.	13	<i>Guildfordiae, Gray</i>	X.	51
<i>Americanus, Gmelin</i>	VII.	31	<i>Hanleyanus, Reeve</i>	I.	2
<i>architectonicus (Pyramis), Adams</i>	IV.	22	<i>heliacus, Philippi</i>	VI.	28
<i>aster, Philippi</i>	VI.	28	<i>heliotropium, Martyn</i>	VI.	30
<i>asteriscus, Reeve</i>	IX.	44	<i>hexagonus, Philippi</i>	XI.	61
<i>aureus, Jonas</i>	XI.	58	<i>histrio, Reeve</i>	XV.	90
<i>auripigmentum, Jonas</i>	VIII.	39	<i>imbricatus, Gmelin</i>	VII.	37
<i>Buschii, Philippi</i>	VIII.	42	<i>imperialis, Chemnitz</i>	VI.	30
<i>cælatus, Chemnitz</i>	VII.	34	<i>inæqualis, Martyn</i>	V.	25
<i>cærulescens, Lamarck</i>	II.	5	<i>incarnatus, Philippi</i>	XII.	68
<i>calcar (Turbo), Linnæus</i>	X.	52	<i>incrassatus, Lamarck</i>	XIII.	77
<i>callicoccus, Philippi</i>	XIII.	73	<i>Japonicus, Dunker</i>	V.	23
<i>columnellaris, Philippi</i>	VII.	33	<i>laciniatus, Reeve</i>	XIII.	76
<i>concinus, Philippi</i>	III.	15	<i>lapillus, Reeve</i>	XI.	65
<i>conus, Gmelin</i>	II.	7	<i>latispina, Philippi</i>	VIII.	40
<i>Cookianus, Chemnitz</i>	VI.	27	<i>longispina, Lamarck</i>	VI.	28
<i>Cookii, Gmelin</i>	VI.	27	<i>maculatus, Linnæus</i>	I.	4
<i>corolla, Reeve</i>	VIII.	38	<i>Mauritianus, Gmelin</i>	IV.	19
<i>costatus, Gmelin</i>	III.	9	<i>metallicus, Reeve</i>	XV.	94
<i>costulatus, Lamarck</i>	VI.	29	<i>modestus, Reeve</i>	X.	56
<i>costifer, Jonas</i>	IV.	19	<i>murreus, Reeve</i>	XIV.	84
<i>crenulatus, Lamarck</i>	IV.	17	<i>nigropunctatus, Reeve</i>	XIII.	71
<i>crebrigranatus, Reeve</i>	XV.	89	<i>niloticus, Linnæus</i>	I.	3
<i>Cubanus, Philippi</i>	VII.	32	<i>noduliferus, Lamarck</i>	II.	6
<i>Cunningii, Adams</i>	XV.	88	<i>obeliscus, Gmelin</i>	II.	8
<i>dentatus, Forskael</i>	III.	12	<i>obesus, Reeve</i>	XIII.	75
<i>diaphanus, Gmelin</i>	XVI.	95	<i>oblitus, Reeve</i>	XVI.	98
<i>digitatus (Turbo), Deshayes</i> ..	V.	24	<i>ochraceus, Philippi</i>	V.	25
<i>diminutivus, Reeve</i>	XI.	57	<i>olivaceus, Wood</i>	VIII.	41
<i>elatus, Lamarck</i>	II.	7	<i>pallidulus (Polydonta), Adams</i>	XV.	92
<i>elegantulus, Wood</i>	XVI.	96	<i>Persicus, Fabius Columna</i> ..	III.	12
<i>erythrophthalmus, Philippi</i> ..	VIII.	41	<i>prasinus, Menke</i>	II.	5
<i>eustephes, Philippi</i>	XIV.	83	<i>punctulatus, Martyn</i>	XVI.	95
<i>exaltatus, Philippi</i>	IV.	16	<i>pustulosus, Philippi</i>	XV.	86
<i>fastigiatus, Adams</i>	XV.	87	<i>pyramidalis, Lamarck</i>	III.	12
<i>fenestratus, Gmelin</i>	IV.	18	<i>pyramis, Born</i>	II.	8
<i>fimbriatus, Lamarck</i>	IX.	49	<i>radiatus, Gmelin</i>	XIV.	80
<i>flammulatus, Lamarck</i>	XII.	70	<i>regius, Chemnitz</i>	III.	10
<i>foveolatus, Gmelin</i>	III.	12	<i>rhodostoma, Lamarck</i>	VII.	35
<i>gibberosus, Chemnitz</i>	V.	25	<i>rotularius, Lamarck</i>	IX.	48
<i>-gibberulus (Polydonta), Adams</i>	XII.	67	<i>sacellum, Philippi</i>	XIV.	78

TROCHUS—INDEX.

	Plate.	Species.		Plate.	Species.
<i>senatorius</i> , Philippi	II.	7	<i>textilis</i> , Reeve	XIV.	82
<i>smaragdus</i> , Reeve	XII.	66	<i>tridentatus</i> , Reeve	XV.	91
<i>spinulosus</i> , Lamarck	X.	55	<i>triserialis</i> , Lamarck	IV.	21
<i>squamiferus</i> , Koch	XI.	60	<i>triumphans</i> , Philippi	X.	51
<i>squarrosus</i> , Lamarck	III.	9	<i>tuber</i> , Linnaeus	XI.	63
<i>stella</i> , Lamarck	X.	52	<i>tuberosus</i> , Philippi	IX.	45
<i>stellaris</i> , Gmelin	IX.	47	<i>turris</i> , Philippi	III.	13
<i>stellatus</i> , Gmelin	XI.	64	<i>undosus</i> , Wood	V.	23
<i>sugillatus</i> , Reeve	XIV.	85	<i>unguis</i> , Wood	IX.	50
<i>sulcatus</i> , Martyn	VI.	27	<i>Urvillei</i> , Philippi	IX.	46
<i>tabidus</i> , Reeve	XIII.	74	<i>venefus</i> , Reeve	XVI.	99
<i>tenebricus</i> , Reeve	XIV.	81	<i>verrucosus</i> , Gmelin	III.	11
<i>tentoriiformis</i> , Jonas	VIII.	43	<i>virgatus</i> , Gmelin	XII.	69
<i>tentorium</i> , Chemnitz	III.	14	<i>viridis</i> , Gmelin	XIV.	79
<i>tentorium</i> , Anton.	V.	25	<i>vividus</i> , Reeve	XIII.	72

ERRATA.

- Sp. 8. *T. pyramis*.—~~Dele~~ synonym *T. acutus*, Lamarck, for which species see Sp. 20.
- Sp. 44. *T. asteriscus*.—~~Dele~~ synonym *T. stellatus?* Gmelin, for which species see Sp. 64.
- Sp. 47. For *T. stellatus*, Chemnitz, read *T. stellaris*, Gmelin.
- Sp. 73. *T. callicoccus* —Add authority Philippi.

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